RESTRICTED

AR 159
Revised Mar 93

Prefix	File Number	Part No.
	11	1

DEPARTMENT OF DEFENCE

• *This cover is to be used for official file series recorded with Austr*

Subject

INFORMATION RELATING TO
UNEXPLAINED AERIEL [redacted]
SIGHTINGS. (UFO's)
+ PHOTOGRAPHS

Folio	Referred to	Date Referred	Actioned by *(Inits)*	Folio	Referred to	Date Referred	Actioned by *(Inits)*

11

Archival Action	Disposal Action	Authority Number	Entry Number	Part No.
				1

Stock No 7530–66–093–3094

RESTRICTED

Closely Related Files	
File Number	Subject

See 5/6/1/AIR PT. 14(25)
for memo concerning
these photos

Department of Defence

DE 88
Revised Apr 79
Stock No 7530-66-102-0600

ACTION MEMO

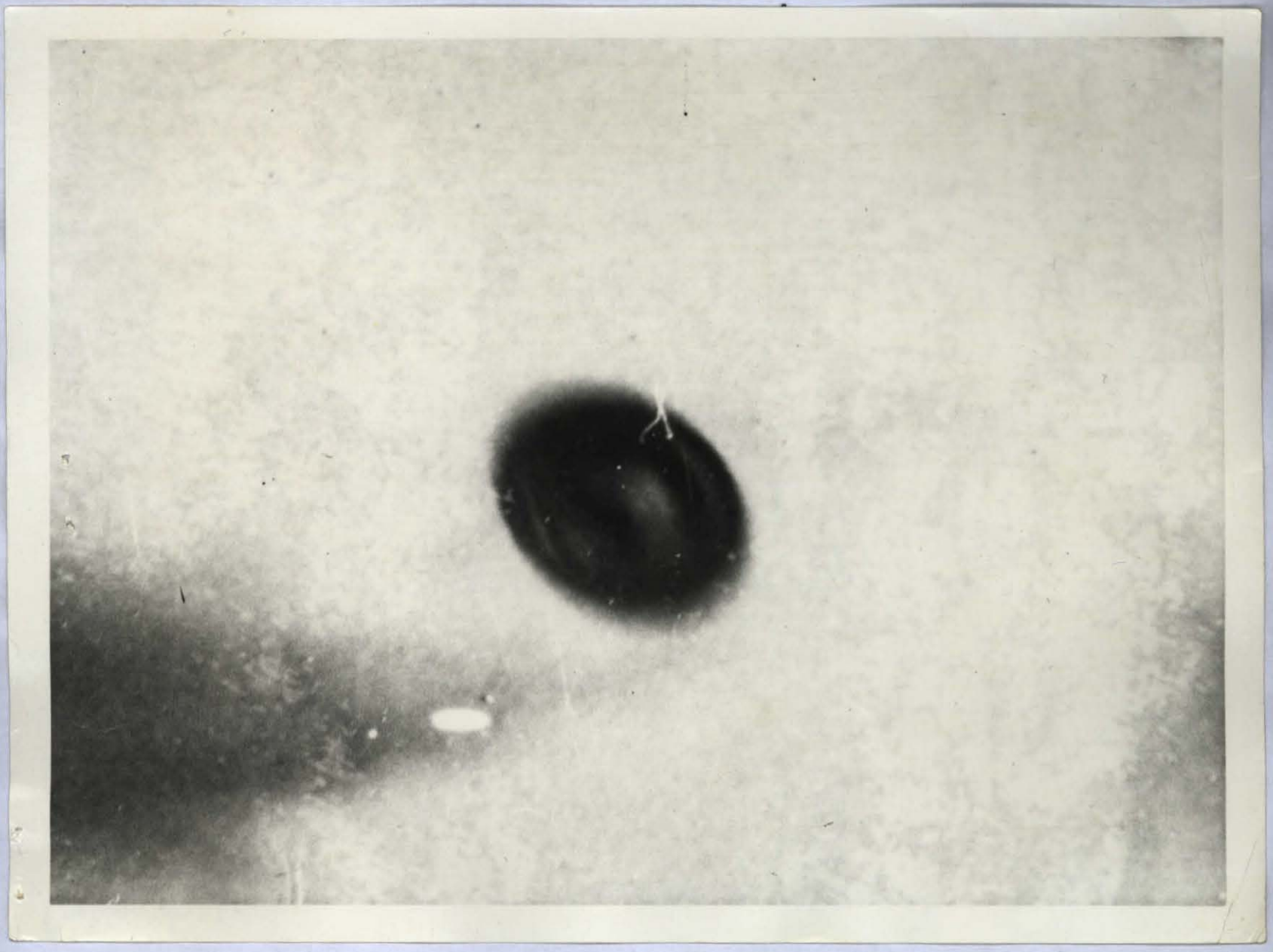
NOT FOR FILING

To

☐ NOTE AND RETURN	☐ FOR ACTION
☐ NOTE AND RETAIN	☐ FOR INFORMATION
☐ FILE AND DISCUSS	☐ FOR COMMENTS
☐ FILE ON ...../...../..... AND MARK TO.....	☐ FOR APPROVAL PLEASE
☐ PREPARE DRAFT REPLY	☐ FOR SIGNATURE PLEASE
☐ PREPARE REPLY FOR SIGNATURE OF.....	☐ CIRCULATE AND CONSOLIDATE REPLY
	☐ PLEASE SPEAK/TELEPHONE

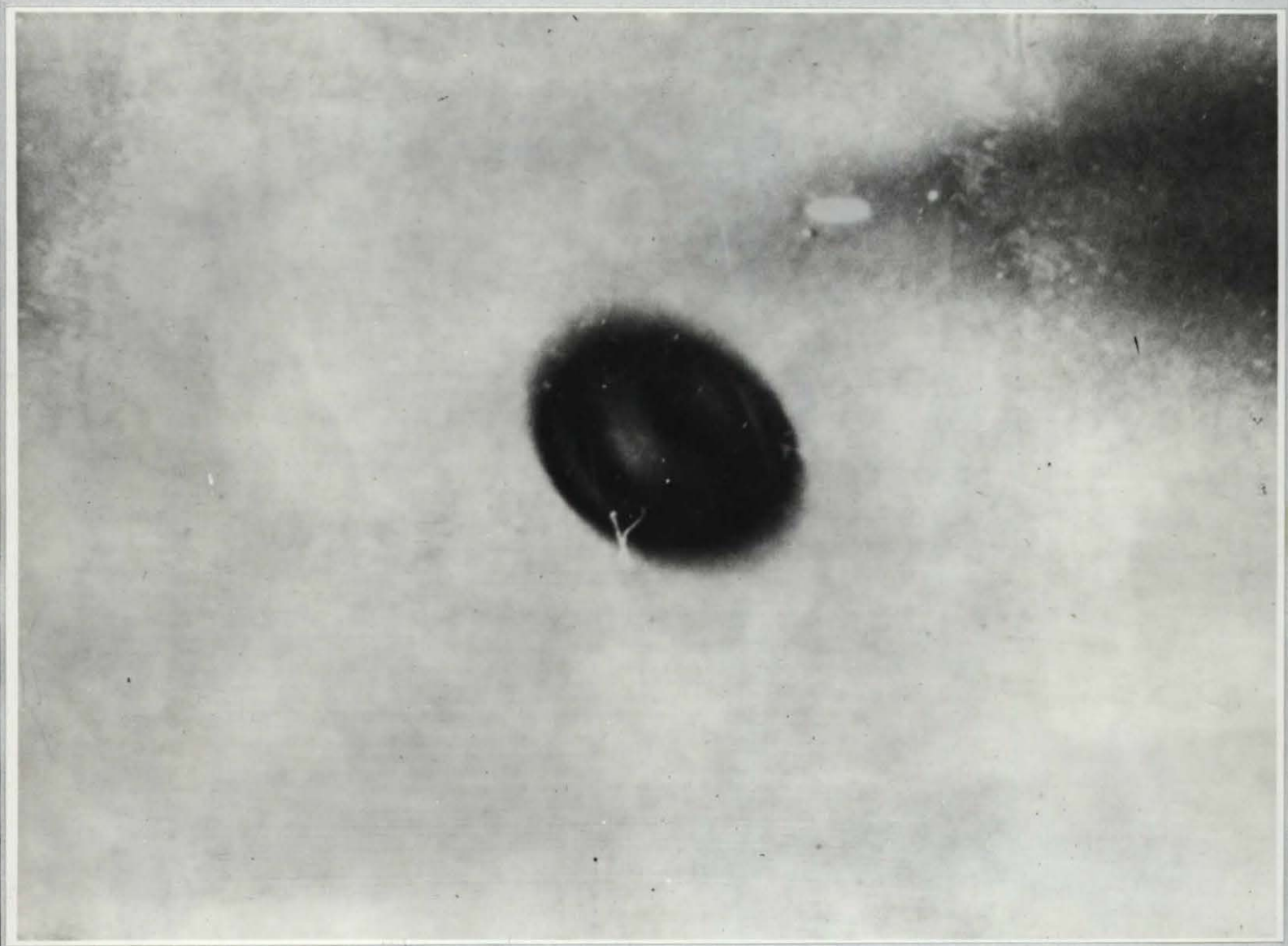
FURTHER COMMENTS

Date	Signature and Appointment	Tel Extn

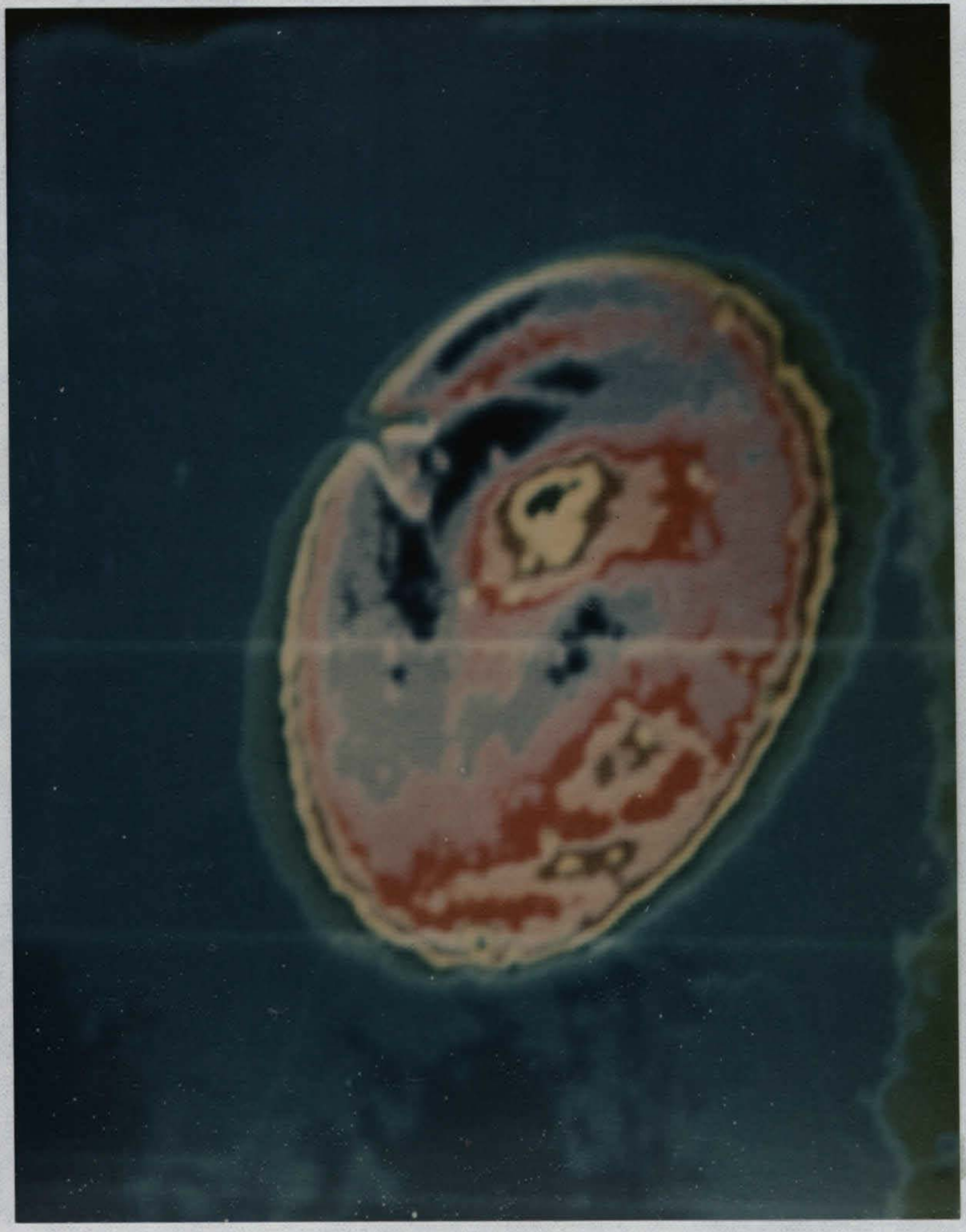


5/6/1/ AIR PT 1.
fol.s 162 A.

Photograph 1.



Original photo on HQSC 5/6/1/AIR PT 1 (162 A)
this reproduction made by CPE Nov 83.



COLOUR
~~EDGE~~ ENHANCEMENT



EDGE ENHANCEMENT

Lights — some see stars, others . . .

A brilliant star in the southern sky has been cutting some colorful capers through breaks in the cloud cover on recent nights.

It and another bright star in the northern sky, have been behaving like the unidentified flying objects seen over Bendigo recently.

● *By DAVID G. HORSFALL*

The recent spate of sightings comes about six weeks off the 10th anniversary of another series of sightings from Echuca through Bendigo to Ballarat and Melbourne.

At that time Peter Hargreaves was working at the Ballarat Courier and spoke to many people who saw the objects.

The first occasion was on April 9 when two reddish-yellow lights flashed across the sky leaving vapor trails and the second occasion was on April 12 when two different phenomena were sighted.

The most dramatic was the appearance of a brilliant object about three-quarters of a kilometre in front of a car.

It was about six metres above the ground and the light so intense the driver had to stop.

It lit the bonnet of his car like a mirror and then it vanished.

Others that night saw a saucer-shaped object with flashing lights around the edge high in the sky, an object like a torch beam travelling fast and low and a bright light moving against a background of stars.

Things were also seen in the skies from Bendigo, but were not described.

The official explanation was that the observers were witnessing the break-up of Cosmos 526, a Russian satellite launched the previous October.

The recent Bendigo sightings all reported objects (up to eight of them at one time) with flashing green and red lights and a constant white light on top.

Observers with binoculars reported seeing some structure and Russell Henthorn, who took color pictures with a telephoto lens (see Advertiser of May 27) was able to demonstrate that at least one of them had penagonal windows with alternate red and green lights and what appeared to be a short turret on top.

The most constant characteristic of the objects reported were flashing red and green lights.

This is also the main characteristic of Canopus — the mainstay of the canopy of the sky to the ancients — which is currently appearing low in the southern sky.

This star is one of the most brilliant objects in the sky and its luminosity has been rated as being equivalent to 80,000 suns.

Its light, when it reaches earth, is exceeded in brilliance only by the sun, moon, major planets and Sirius.

Because it is low in the sky, it is seen through more atmosphere than most others and this causes it to flash with brilliant red and green colors which are merely emphasisted when viewed through binoculars.

Canopus is used by celestial navigators and space technicians.

The former use it as a cardinal reference point in the sky and the latter use its brilliance as a means of stabilising the attitudes of satellites and space probes by fixing sensors on it.

Over at the other end of the sky — the far north — Capella is making his annual appearance in Southern Hemisphere skies.

Capella — the Little Goat of the ancients — bids fair to make big goats out of unwary sky watchers.

Still brilliant, but not in the same class as Canopus, this star has another, and even trickier, attribute.

Not only does it also flash red and green but it also appears to travel fairly quickly through the sky.

It achieves this illusion because it is one of the stars most distant from the celestial pole that an Australian observer can see.

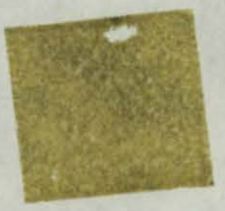
Thus, in the far north and almost on the horizon, the rotation of the earth is seen at its greatest and Capella seems to move swiftly over the trees and roofs.

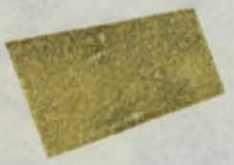
It is believed that some people have confused either, or both of the stars, with other objects which, as the Henthorn pictures show, do have substance.

Bendigo Advertiser June 1st 1983

AUSTRALIAN
MON 23 MAY 83 p2









PRINTS OF MR HENTHORN'S FILM - PRODUCTION DETAILS

ENLARGER: De Vere Dichromat No 1

PAPER: Kodak Ekatcolor 'E' 10" x 8"

ENLARGER LENS: 50mm 9238879 f no 2.8.

ORIGINAL FRAME NO	PRINT NO	FILTERS USED *		
3	1	65m 55y	@ 60 sec	T + F
4	2	65m 55y	"	T
		-5m		
		60m 55y	"	F
5	3	50m 30y	"	T + F
6	4	50m 30y	"	T + F
7	5	65m 55y	"	T + F
8	6	50m 30y	"	T1
		60m 45y	"	T2
		65m 46y	"	F
		5		
9	7	60m 40y	"	T1
		60m 50y	"	T2
		65m 55y	"	T3
		60m 55y	"	F

* KEY TO SYMBOLS

m = magneta filter
y = yellow filter
T = test print
F = final print

CPE staff attempted to get the background of all prints as close to black as possible in order to achieve some standard between the frames.

S/6/Air ( )
AF529/1/4 ( )

UNDERTAKING TO PRESERVE CONFIDENTIALITY

I, (Full name) ..... of

(Address) .....

hereby undertake to preserve the confidentiality of the names and any personal information of those persons who submitted the Unusual Aerial Sighting Reports to which I have been granted access, to ensure that their names are not recorded in my records or in print, and to not approach them without prior approval of the Director of Air Force Intelligence and Security.

.....
Date

.....
Signature

Bendigo Advertiser
Mon 23 May 83 p1.

No 'down-to-earth' explanation

UFO sightings

Reported sightings of brightly colored unidentified flying objects over north central Victoria during the weekend have brought lots of theories.

Hundreds of people throughout the district contacted police and radio stations around 11 pm on Friday to report nine cylindrical UFOs complete with flashing red, green, blue and yellow lights.

Bendigo radio station 3BO announcer, Mr Greg Evans, said the station's switchboard was jammed with callers.

Sightings were reported on Saturday and last night.

The UFOs allegedly floated across the sky slowly and steadily and were seen by people as far afield as Kyneton, Maryborough and Heathcote as well as throughout the Bendigo district.

Mr Evans said he reported the UFOs to the Royal Australian Air Force and to the Tullamarine Airport air traffic control tower although both said they could not find a trace of them on their radar scanners.

One theory put forward to explain the UFOs was light from a laser light show being reflected from cloud layers back to earth.

A rock band it was claimed had been using the light show during a practice session during the times of the reported sightings.

Mr Evans said he disagreed with the laser theory as there was little or no cloud in the sky until after the UFOs had passed out of sight.

"The area the UFOs were seen in was too big for a laser light show to create images in the sky, so I'm in two minds about whether they really were UFOs.

"Also the number of sightings seems too many for the UFOs to have been a fake," he said.

Bendigo police said they were "driven mad" by the number of calls received about the UFOs.

"The funny thing is," they said, "no police staff saw even a suggestion of a UFO all night."

Maryborough police said reports of UFO sightings came in on Friday and Saturday nights, including a particularly graphic description of one between Carisbrook and Clunes.

No invasion

A police spokesman said they went to investigate the report but "there was no sign of an invasion anywhere and radio contact could not be made with anything other than other police cars and stations."

A RAAF spokesman said the after - hours duty officer had been kept awake all weekend with reports of the UFOs.

M8

O.H.M.S.

AUSTRALIAN GOVERNMENT

If not delivered within 7 days, return to
DEPARTMENT OF DEFENCE (AIR OFFICE)

.....

.....

UAS INFO.

RELATING TO

BENDIGO ONLY

O.H.M.S.

AUSTRALIAN GOVERNMENT

If not delivered within 7 days, return to
DEPARTMENT OF DEFENCE (AIR OFFICE)

.....

.....

M 8

U.F.O.s

RAAF checks UFO reports

The RAAF will today investigate numerous reports of unidentified flying objects near Bendigo.

Flight - Lieutenant Brett Biddington will talk to people in Bendigo today, including a 3BO radio announcer, Mike Evans, and two local residents about alleged sightings last Friday and Saturday nights of "cone - shaped objects with flashing lights".



● **THIS gleaming monster was discovered at 4.15 am Tuesday at the height of the excitement about unidentified flying objects.**

Radar balloon drops in

It was found sitting in the middle of the Midland Highway about 16 km out of Geelong by Robert Leech of Eaglehawk and brought to the Advertiser by his brother-in-law Peter Jones of Specimen Hill.

Here office girl Dianne Miles holds the visitor from the skies by its tail.

It is a four-vaned radar reflector made of foil covered plastic. The remains of the burst balloon which carried it aloft to help measure wind speeds hangs down below.

THIS PAGE IS THE REVERSE OF THE PREVIOUS PAGE
AND MAY NOT BE RELEVANT TO THE FILE

Bendigo Advertiser

MONDAY, MAY 30, 1983 PRICE 20c*

ANS RTS

ommunity are alia despite the

itory Primary Pro-

riculture Department informed the Com- ion Service of their

taken immediately to world reference centre Pirbright, to test for presence of exotic dis- e.

Mr Cameron said the re- ts of the tests could known within days, or thin three weeks at the ost.

House fires —2 die

Two men died in eparate house res in the Bendi- o area last night.

A man, 35, died in a re at Eaglehawk and n elderly man died vhen his house in Galvin St, Quarry Hill, caught fire.

A father, 35, died when he house in which he liv- d, at 71 Kirkwood Rd, aglehawk, was complete- gutted by fire between pm and 11.30 pm.

The man's wife, his aby and mother escaped rom the fire.

Three units battled the ames while two firemen ntered the smoke-filled ouse wearing breathing pparatus.

When police arrived at he scene at 11.20 flames uickly engulfed the old eatherboard house giving remen little opportunity prevent them spreading.

he fire engulfed the



• ABOVE: This was the scene at the first of Bendigo's revamped Blue Light Disco. More than 400 teenagers danced to the modern disco beats pumped out by Brad Bridger's music machine. The music went non-stop and so did the dancers, from 7.30 pm until 11 pm.

• BELOW: What a pair of disco dynamos. Liz Drane and Earl Snijders danced their way to becoming Miss Blue Light Disco and Mr Bobby-dazzler.

A great Blue Lig

It was a nerv filed into, and line



More UFOs sighted

Egg-shaped objects with square flashing red, white and blue lights were out in force again last night, according to a Kangaroo Flat teenager.

Stephen Ilac, 15, reported seeing the objects through binoculars and said they appeared to be moving away at an alarming rate."

Three of them were prominent in the north west and another could be seen in the west, he said.

Lights — some see stars, others . . .

A brilliant star in the southern sky has been cutting some colorful capers through breaks in the cloud cover on recent nights.

● By DAVID G. HORSFALL

It and another bright star in the northern sky, have been behaving like the unidentified flying objects seen over Bendigo recently.

The recent spate of sightings comes about six weeks off the 10th anniversary of another series of sightings from Echuca through Bendigo to Ballarat and Melbourne.

At that time Peter Hargreaves was working at the Ballarat Courier and spoke to many people who saw the objects.

The first occasion was on April 9 when two reddish-yellow lights flashed across the sky leaving vapor trails and the second occasion was on April 12 when two different phenomena were sighted.

The most dramatic was the appearance of a brilliant object about three-quarters of a kilometre in front of a car.

It was about six metres above the ground and the light so intense the driver had to stop.

It lit the bonnet of his car like a mirror and then it vanished.

Others that night saw a saucer-shaped object with flashing lights around the edge high in the sky, an object like a torch beam travelling fast and low and a bright light moving against a background of stars.

Things were also seen in the skies from Bendigo, but were not described.

The official explanation was that the observers were witnessing the break-up of Cosmos 526, a Russian satellite launched the previous October.

The recent Bendigo sightings all reported objects (up to eight of them at one time) with flashing green and red lights and a constant white light on top.

Observers with binoculars reported seeing some structure and Russell Henthorn, who took color pictures with a telephoto lens (see Advertiser of May 27) was able to demonstrate that at least one of them had penagonal windows with alternate red and green lights and what appeared to be a short turret on top.

The most constant characteristic of the objects reported were flashing red and green lights.

This is also the main characteristic of Canopus — the mainstay of the canopy of the sky to the ancients — which is currently appearing low in the southern sky.

This star is one of the most brilliant objects in the sky and its luminosity has been rated as being equivalent to 80,000 suns.

Its light, when it reaches earth, is exceeded in brilliance only by the sun, moon, major planets and Sirius.

Because it is low in the sky, it is seen through more atmosphere than most others and this causes it to flash with brilliant red and green colors which are merely emphasised when viewed through binoculars.

Canopus is used by celestial navigators and space technicians.

The former use it as a cardinal reference point in the sky and the latter use its brilliance as a means of stabilising the attitudes of satellites and space probes by fixing sensors on it.

Over at the other end of the sky — the far north — Capella is making his annual appearance in Southern Hemisphere skies.

Capella — the Little Goat of the ancients — bids fair to make big goats out of unwary sky watchers.

Still brilliant, but not in the same class as Canopus, this star has another, and even trickier, attribute.

Not only does it also flash red and green but it also appears to travel fairly quickly through the sky.

It achieves this illusion because it is one of the stars most distant from the celestial pole that an Australian observer can see.

Thus, in the far north and almost on the horizon, the rotation of the earth is seen at its greatest and Capella seems to move swiftly over the trees and roofs.

It is believed that some people have confused either, or both of the stars, with other objects which, as the Henthorn pictures show, do have substance.

THIS PAGE IS THE REVERSE OF THE PREVIOUS PAGE
AND MAY NOT BE RELEVANT TO THE FILE

machinery.

A pair of workers can remove up to 12 car bodies a day, carefully chaining them on to the truck before moving along the narrow commission tracks to either the Kangaroo Flat or the Bendigo municipal tips.

Mr Stewart has worked for the Forests Commission for some

the public treating valuable reserves of native fauna as a convenient junkyard.

"This year there were not as many cars picked up but other rubbish is still being dumped along commission roads," he said.

"The rubbish itself is visually unattractive and only paper products rot down after a while.

moved."

Mr Stewart said forest officers in other areas of Victoria had similar problems though perhaps not on such a dramatic scale.

"The problem in Bendigo is that the forest is so close to the township and it is easy to find somewhere quiet and out of the way to get rid of that old car

Thatcher under fire

welfare 'plot'

LONDON (AAP-Reuter). — The Prime Minister, Mrs Thatcher, is facing a torrent of charges that she has a secret program to demolish Britain's welfare state.

Back on the campaign trail from the Williamsburg Western Summit, she faces Opposition parties united in accusing her of concealing her Conservative Government's true intentions from the voters.

Both the Labor Party and the Liberal - Social Democratic Alliance cited a series of recently-leaked documents as evidence that a "secret manifesto" lies behind the one the Government has presented to voters.

The deputy Labor leader, Mr Healey, said the plans included ending state-financed education, sweeping cuts in state benefits and selling off large parts of the National Health Service.

He told a news conference Mrs Thatcher would be driven to such spending cuts to meet the cost of worsening unemployment, which has almost tripled to 13 per cent during her four-year rule.

The Conservative Party chairman, Mr Cecil Parkinson, called Mr Healey's allegations "a farrago of vicious untruths" meant to frighten the old, the sick and the underprivileged.

The Liberal leader, Mr Steel, said Mrs Thatcher's call last week for a huge majority was so that she co[illegible] fire the few remain[illegible]

Mr Foot with Mr Healey as campaign front man, the London Daily Mail reported yesterday.

Their astonishing coup came in an effort to avoid being buried in a Mrs Thatcher landslide a week tomorrow.

Mr Foot later insisted that nothing had changed and angrily denied the suggestion that he was taking a back seat.

It may even be that he

Speed

A Gippsland man lost his licence and was fined $350 in the Bendigo court on Monday after being convicted of driving dangerously at 120

CORRIGAN'S PHARMACY
Full range of
Elizabeth Arden,
Yardley and
Monestique Cosmetics
W. P. Bisset, Ph. C
PHONE 43 5126

DOU
MARONG VILLAG
88 VICT
"DON"
SA
Compare o
FIRST CUT
$4.9

Bendigo Advertiser

PHONE 43 6333
CLASSIFIED 43 1322

No. 37,062 FRIDAY, MAY 27, 1983 PRICE 20c* 12 pages

ANOTHER PHOTO. OF NIGHT LIGHTS

A White Hills Technical School student has captured on film one of the best likenesses of a "flying saucer" seen anywhere.

Russell Henthorn, 16, took the pictures from his parents' home in Theodore St, Flora Hill on Tuesday after a sighting at 8.58 pm.

His pictures reveal an object which appears to be circular, of considerable width in relation to its diameter, surmounted by a superstructure, also circular, and surrounded with green and red lights.

His film is in color. One of the seven pictures he took during 45 minutes of observation clearly shows three lights on the side of the object facing the observer. Two of the lights were blue and one red.

Each was in a clearly defined five-sided frame, the adjacent frames being reversed so each fitted snugly together, the point of one being at the top and the bases of its neighbors at the bottom.

Another picture showed the object tilted so its superstructure was visible.

This appeared to be like the traditional dome on the traditional flying saucer, except it had vertical sides.

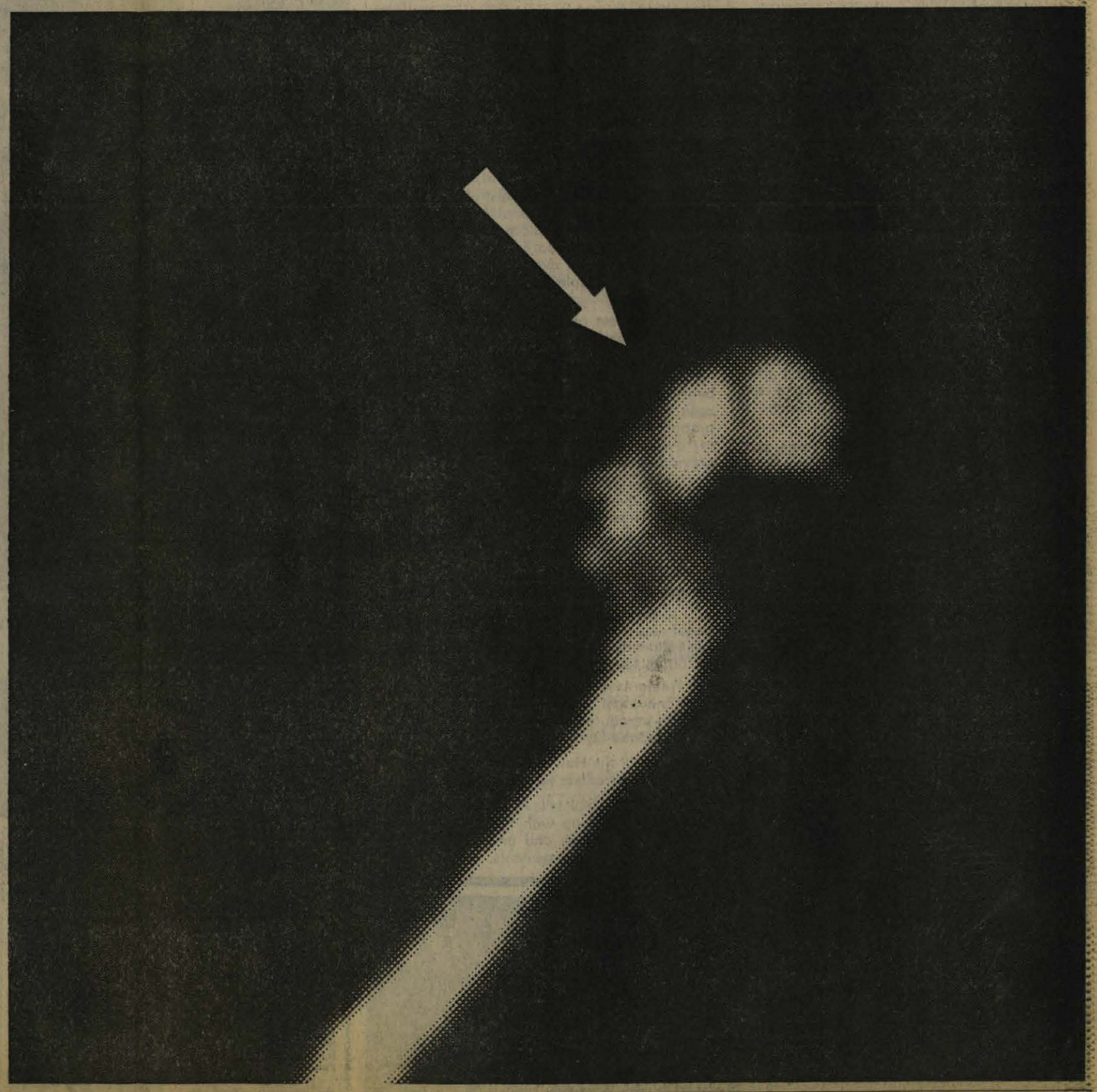
Russell took the pictures with a Fujica STX 1 body attached to a 500 mm lens backed by a two-times multiplier. He used Fujicolor film rated at 100 ASA, which is slow by present day standards, and his exposures ranged from 10 seconds to 10 minutes.

The camera was mounted on a tripod and was triggered with a cable release.

At the beginning the object was at an angle of about 45 degrees from the horizon in the north-west part of the sky, but appeared to rapidly drop towards the horizon.

There was some light cloud in the sky at the time, but not in that part of it occupied by the object.

Although the resolution of the pictures was not great enough to be certain it appeared there were six lights around the circumference. Many observers, including Russell, reported the objects either were spinning or created an impression of spinning by flashing the colored lights on and off.



Mystery object looked like this

N-test annoys

There's been a new French nuclear test on Mururoa Atoll in the South Pacific.

It has provoked the Australian Government into a move to organise regional resistance, AAP reports.

Foreign Affairs Minister, Mr Hayden received intelligence reports that a 70 kilotonnes device was exploded on Mururoa and he immediately pledged to work towards making life uncomfortable for the French Government.

● Report — P.3.

One sighting is a star

Mysterious night lights appearing over central Victoria and Melbourne have set many minds wondering, but the RAAF has an explanation for at least one of the lights.

The light seen in the western to southern sky over Melbourne between 11 pm and midnight on Wednesday could have been the star Spiker, but was more likely the star Canopus.

RAAF investigating officer, Flight-Lt Brett Biddington came to this conclusion after listening to descriptions of the light, watching a HSV7 video of the light and taking weather conditions into consideration.

Bendigo there were more than that.

He said there were too many variables such as weather conditions, atmosphere distortion and magnification to be positive the lights seen in Melbourne were the same as those seen in Bendigo.

● Report, pictures — P.2.

BENDIGO BP SERVICE STATION
CORNER HIGH & DON STS.
WINDSCREEN CENTRE
SUNROOFS-WINDOW TINTING
VAN WINDOWS-TOW BARS
TAILORED CARPETS
B.T.B. smash repairs
24 HR TOWING
NEAR SHOWGROUNDS PH. 43 1755

● Report — P.3.

defined five-sided frame, the adjacent frames being reversed so each fitted snugly together, the point

BENDIGO BP SERVICE STATION
CORNER HIGH & DON STS.
WINDSCREEN CENTRE
SUNROOFS-WINDOW TINTING
VAN WINDOWS-TOW BARS
TAILORED CARPETS
B.T.B. smash repairs
24 HR TOWING
NEAR SHOWGROUNDS PH. 43 1755

One sighting is a star

Mysterious night lights appearing over central Victoria and Melbourne have set many minds wondering, but the RAAF has an explanation for at least one of the lights.

The light seen in the western to southern sky over Melbourne between 11 pm and midnight on Wednesday could have been the star Spiker, but was more likely the star Canopus.

RAAF investigating officer, Flight-Lt Brett Biddington came to this conclusion after listening to descriptions of the light, watching a HSV7 video of the light and taking weather conditions into consideration.

Flight-Lt Biddington said the light, which closely resembled those seen in central Victoria earlier this week, had been seen from all parts of Melbourne, Werribee and Mornington Peninsula.

He said inversions, caused by hot air trapped below a layer of dense cold air, would distort light projected from the earth and coming in from the stars which could have caused the UFO effect.

People reporting the lights said it had been basically white with red and green flashes and seemed to be revolving. The light moved from the west to the southwest.

Flight-Lt Biddington said this was the RAAF's explanation, but it was up to people to decide whether to accept or reject it.

While finding an explanation for the light over Melbourne was not all that difficult, Flight-Lt Biddington is not satisfied with that explanation for the lights seen over central Victoria.

He said only one light was seen in Melbourne, while in Bendigo people have reported seeing five or six lights at the same time.

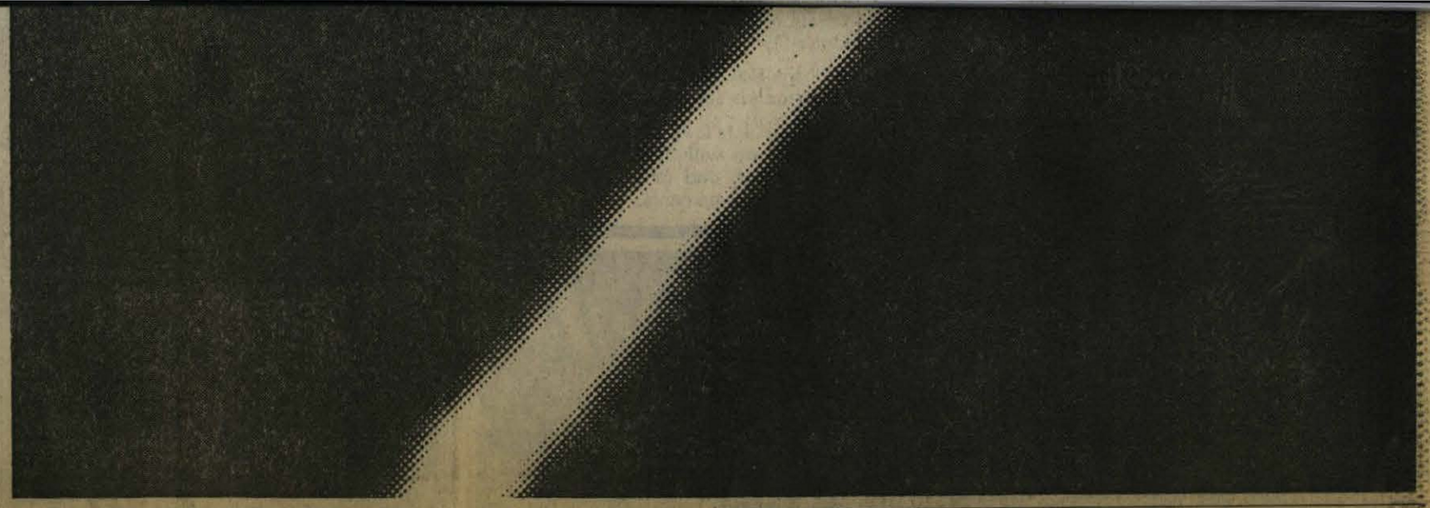
He said investigations into the phenomena would continue, with all possibilities including the lights being caused by lasers, being investigated.

Paul Muiqueen, of Bendigo, who chased the lights and saw eight at one time, said the lights filmed over Melbourne by HSV7 cameramen closely resembled those he saw over Bendigo.

But he is not totally convinced they are the same as in Melbourne. There was only one light and in Bendigo there were more than that.

He said there were too many variables such as weather conditions, atmosphere distortion and magnification to be positive the lights seen in Melbourne were the same as those seen in Bendigo.

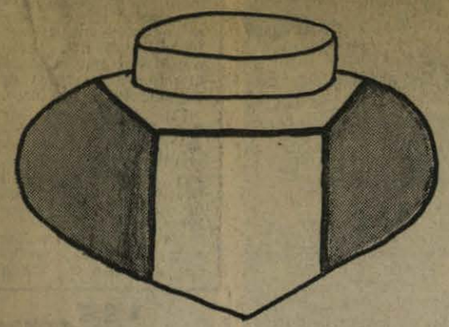
● Report, pictures — P.2.

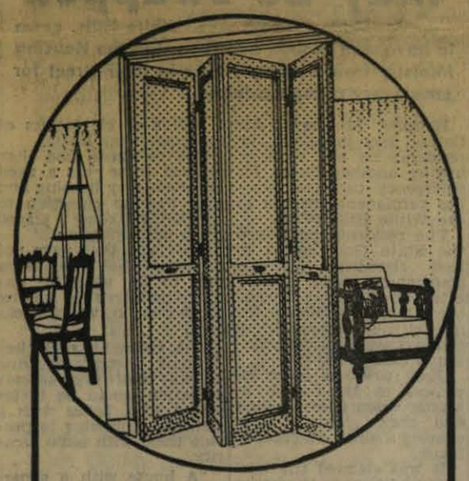


Mystery object looked like this

● ABOVE: This remarkable picture of an unidentified flying object was taken on Tuesday night by Russell Henthorn, 16. This picture, blown up 16 times from the original, shows the pentagon-shaped lights (arrowed) around the circumference of the object. These were impressed on the film the moment the shutter opened at the start of an eight-minute exposure. All the longer exposures showed the same straight trail of light as the object moved out of the frame.

● RIGHT: An artist's impression of the object. The object looked like an elongated Chinese lantern or 1920s era lampshade. The central panel emitted a red light and appeared to be either flat or recessed and two outside panels gave off a green light. These were also pentagon-shaped but extended outwards in the centre in the form of bosses. The object had a brilliant white light on top and the other lights appeared to be flashing on and off.





Sylon makes life a little easier with quiet, smooth operating door tracks, for sliding and multi-fold folding doors.

REMEMBER THE NAME... SYLON, IT'S BEHIND THE BEST BEHAVED DOORS.

HUME & ISER PTY. LTD.
TIMBER AND HARDWARE MERCHANTS
CHARLESTON ROAD, BENDIGO
PHONE (054) 43 0422

WATER BOARD IS A FURPHY

No decision had been made by the State Government on the future of the Bendigo Creek Improvement Trust, Mr David Kennedy MLA (Bendigo) said yesterday.

Mr Kennedy made the announcement after discussions with the Water Supply Minister, Mr White, on the recommendations of the eighth report of the Public Bodies Review Committee.

The report, tabled in Parliament on Tuesday, had called for the abolition of the Bendigo Creek Improvement Trust and the creation of a "Bendigo Water Board" as part of a resructuring of Victora's non-metropolitan water industry.

Mr Kennedy said: "Mr White has confirmed the Government's announcement of last year the State Rivers and Water Supply Commission would retain its water retailing functions and these would not be transferred to a new Bendigo water board as part of a new body with the sewerage authority as proposed in the sixth report of the Public Bodies Review Committee last year.

Firm

"A firm decision was made last year that the retail functions of the Water Commission should continue in the hands of the community and should

'Super' protest halt . . . for now

CANBERRA (AAP). — The Prime Minister, Mr Hawke yesterday managed to defer a planned air pilots' embargo over the Government's decision to increase tax on superannuation payments, but NSW public servants have now called for a one-day national strike.

Pilots announced they would meet Treasurer Mr Keating today after Mr Hawke told Parliament they should seek this course instead of halting air services to Canberra.

The industrial action was planned to start last night, just before Federal Parliament rose for the week.

Mr Keating also will meet ACTU representatives in Sydney later today to discuss objections they have to aspects of the Government's decision.

But the NSW Public Service Association called on the ACTU to organise a 24-hour national strike if the Government did not drop the tax proposals announced in last Thursday night's mini-Budget.

PSA general secretary Mr Geoff Hammond said at its annual conference in Sydney the association supported the ACTU's stand against "this iniquitous tax slug".

Meanwhile in Adelaide, the South Australian trade union movement joined labor protests, by saying the Federal Government would suffer "serious consequences" if the superannuation controversy continued.

In Federal Parliament, Opposition Leader Mr Peacock said the Government's handling of the decision had been inept.

● Editorial — P.2.

Jobs in health services

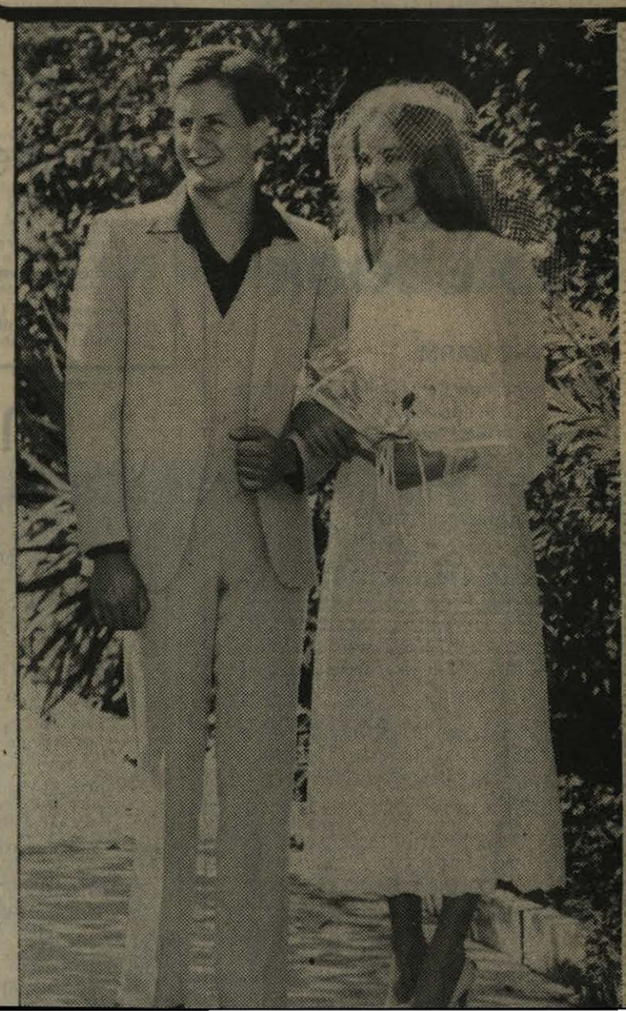
Fifteen new jobs will be created in hospitals and health centres in Bendigo under State and Federal government job creation schemes.

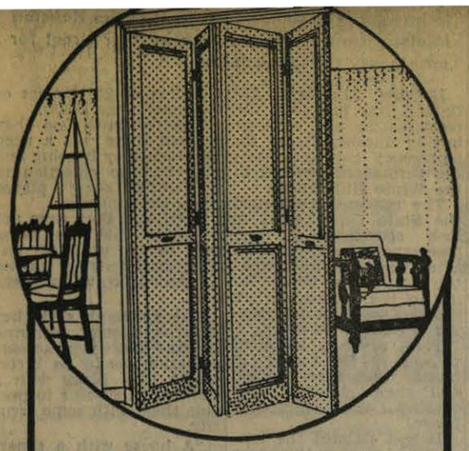
Mr David Kennedy, MLA (Bendigo) and Mr John Brumby MHR (Bendigo) announced yesterday the jobs would be for at least three months and would be available to youths and adults who had been out of work for a long period.

"Two positions will be created at the Bendigo Base Hospital and another two at the Bendigo Home and Hospital for the

G.M.A.C. FINANCE
NO HASSLE
AUTO FINANCE
LOW PAYMENTS
TO SUIT YOUR BUDGET

FOR THAT VERY SPECIAL DAY...
You owe it to yourself to use
ASHMANS FORMAL HIRE





Sylon makes life a little easier with quiet, smooth operating door tracks, for sliding and multi-fold folding doors.

REMEMBER THE NAME... **SYLON,** IT'S BEHIND THE BEST BEHAVED DOORS.

HUME & ISER PTY. LTD.
TIMBER AND HARDWARE MERCHANTS
CHARLESTON ROAD, BENDIGO
PHONE (054) 43 0422

sa. the light, which closely resembled those seen in central Victoria earlier this week, had been seen from all parts of Melbourne, Werribee and Mornington Peninsula.

He said inversions, caused by hot air trapped below a layer of dense cold air, would distort light projected from the earth and coming in from the stars which could have caused the UFO effect.

People reporting the lights said it had been basically white with red and green flashes and seemed to be revolving. The light moved from the west to the southwest.

Flight-Lt Biddington said this was the RAAF's explanation, but it was up to people to decide whether to accept or reject it.

While finding an explanation for the light over Melbourne was not all that difficult, Flight-Lt Biddington is not satisfied with that explanation for the lights seen over central Victoria.

He said only one light was seen in Melbourne, while in Bendigo people have reported seeing five or six lights at the same time.

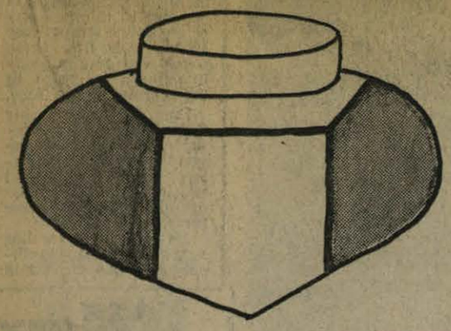
He said investigations into the phenomena would continue, with all possibilities including the lights being caused by lasers, being investigated.

Paul Muiqueen, of Bendigo, who chased the lights and saw eight at one time, said the lights filmed over Melbourne by HSV7 cameramen closely resembled those he saw over Bendigo.

But he is not totally convinced they are the same as in Melbourne. There was only one light and in

• **ABOVE:** This remarkable picture of an unidentified flying object was taken on Tuesday night by Russell Henthorn, 16. This picture, blown up 16 times from the original, shows the pentagon-shaped lights (arrowed) around the circumference of the object. These were impressed on the film the moment the shutter opened at the start of an eight-minute exposure. All the longer exposures showed the same straight trail of light as the object moved out of the frame.

• **RIGHT:** An artist's impression of the object. The object looked like an elongated Chinese lantern or 1920s era lampshade. The central panel emitted a red light and appeared to be either flat or recessed and two outside panels gave off a green light. These were also pentagon-shaped but extended outwards in the centre in the form of bosses. The object had a brilliant white light on top and the other lights appeared to be flashing on and off.



WATER BOARD IS A FURPHY

No decision had been made by the State Government on the future of the Bendigo Creek Improvement Trust, Mr David Kennedy MLA (Bendigo) said yesterday.

Mr Kennedy made the announcement after discussions with the Water Supply Minister, Mr White, on the recommendations of the eighth report of the Public Bodies Review Committee.

The report, tabled in Parliament on Tuesday, had called for the abolition of the Bendigo Creek Improvement Trust and the creation of a "Bendigo Water Board" as part of a resructuring of Victora's non-metropolitan water industry.

Mr Kennedy said: "Mr White has confirmed the Government's announcement of last year the State Rivers and Water Supply Commission would retain its water retailing functions and these would not be transferred to a new Bendigo water board as part of a new body with the sewerage authority as proposed in the sixth report of the Public Bodies Review Committee last year.

Firm

"A firm decision was made last year that the retail functions of the Water Commission should continue in the hands of the community and should not be transferred to a board combining sewerage and water functions for the Bendigo urban area.

"The Government's main concern there was job security among employees that would be affected and the Government took account of expressions of concern that came last year from the employees."

Chairman of the Bendigo Creek Improvement Trust and the Bendigo Sewerage Authority, Cr P. D. Mansell, said it was obvious the releasing of the review committee's recommendations on the creek trust had been based on "mis-information."

'Super' protest halt . . . for now

CANBERRA (AAP). — The Prime Minister, Mr Hawke yesterday managed to defer a planned air pilots' embargo over the Government's decision to increase tax on superannuation payments, but NSW public servants have now called for a one-day national strike.

Pilots announced they would meet Treasurer Mr Keating today after Mr Hawke told Parliament they should seek this course instead of halting air services to Canberra.

The industrial action was planned to start last night, just before Federal Parliament rose for the week.

Mr Keating also will meet ACTU representatives in Sydney later today to discuss objections they have to aspects of the Government's decision.

But the NSW Public Service Association called on the ACTU to organise a 24-hour national strike if the Government did not drop the tax proposals announced in last Thursday night's mini-Budget.

PSA general secretary Mr Geoff Hammond said at its annual conference in Sydney the association supported the ACTU's stand against "this iniquitous tax slug".

Meanwhile in Adelaide, the South Australian trade union movement joined labor protests, by saying the Federal Government would suffer "serious consequences" if the superannuation controversy continued.

In Federal Parliament, Opposition Leader Mr Peacock said the Government's handling of the decision had been inept.

● Editorial — P.2.

BENDIGO
Cool with some rain. Top: 15.
Cool and cloudy with occasional light rain and light wind.
MELBOURNE
Fine and cool. Top: 15. Early fog patches. A fine cool and mostly cloudy day with light wind.
VICTORIA
Early morning fog patches. Cool and mostly cloudy. Patchy rain and drizzle mainly about the ranges. East to northeasterly wind, fresh to strong offshore. Moderate to rough sea.
YESTERDAY
Yesterday **Bendigo's** weather was cool and fine with a top temperature of 15.4 after an overnight low of 9.8.



Other readings: Dry bulb 15.2, wet 12.5; wind NE at .04 knots; humidity 72 per cent; barometer 1022.7 and falling.

Jobs in health services

Fifteen new jobs will be created in hospitals and health centres in Bendigo under State and Federal government job creation schemes.

Mr David Kennedy, MLA (Bendigo) and Mr John Brumby MHR (Bendigo) announced yesterday the jobs would be for at least three months and would be available to youths and adults who had been out of work for a long period.

"Two positions will be created at the Bendigo Base Hospital and another two at the Bendigo Home and Hospital for the Aged," the MPs said in a joint statement.

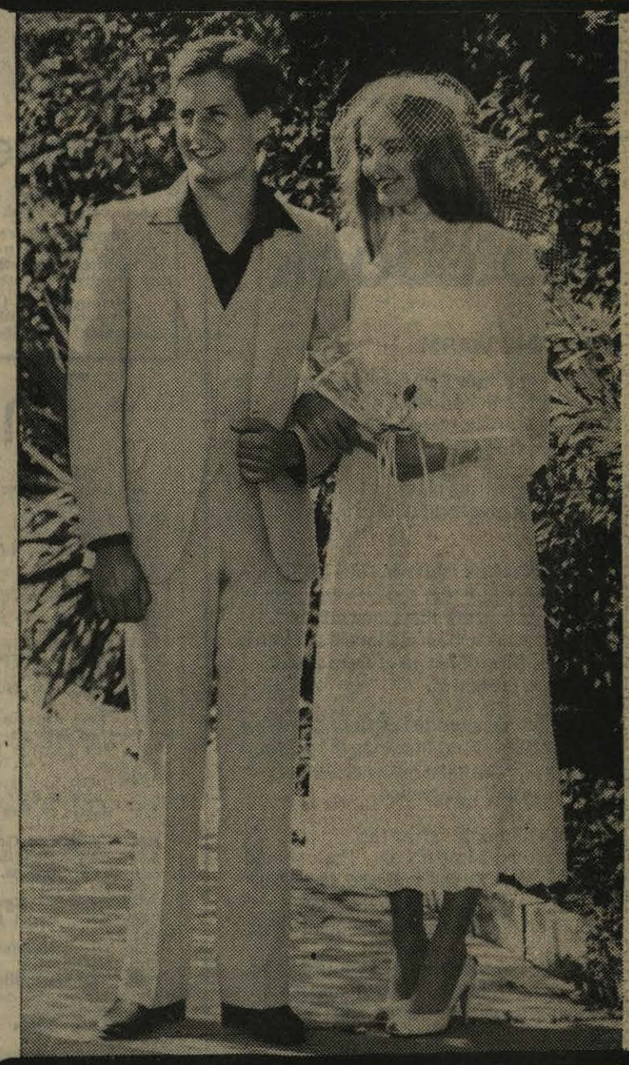
"These will be secretarial and clerical positions or they may be manual or semi-skilled jobs, depending on the requirements of the employer.

"A similar position will be created at the Eaglehawk and Long Gully Community Health Centre, the Kangaroo Flat - Golden Square Community Health Centre and the Bendigo Psychiatric Centre.

"At the Bendigo Psychiatric Centre, there will be seven additions to cleaner and domestic staff and for general assistance purposes."

G.M.A.C. FINANCE
NO HASSLE
AUTO FINANCE
LOW PAYMENTS
TO SUIT YOUR BUDGET
We invite you to come in and talk to
FRANCIS DASCH -today.
G.M.H. $500 BONUS IN CLOSING DAYS
Ron Poyser GMH HOLDEN
High Street Bendigo 3550
Telephone (054) 423999 LMCT 3903

FOR THAT VERY SPECIAL DAY...
You owe it to yourself to use ASHMANS FORMAL HIRE



WEDDING GROUPS AND DEB. SETS ARE ESPECIALLY CATERED FOR AT
Ashmans
THE HARGREAVES MALL — BENDIGO

Bendigo Advertiser
'WITHOUT FEAR OR FAVOR'

A good case for national 'super'

UNLIKE many comparable countries Australia has consistently failed to grasp the nettle when it comes to the establishment of our own national superannuation scheme.

Both Liberal and Labor Governments have put the proposition in the too hard basket because they believed the reform, no matter how desirable, would alienate those voters who would be forced to take a cut in their standard of living.

This political expediency has resulted in a remarkably untidy and inequitable mish-mash of private and public sector superannuation and pension schemes.

As we have pointed out on numerous occasions the inequities are scandalous and abhorrent.

What better example of this could we have than the exclusive Federal MPs superannuation club which gave the former Prime Minister, Mr Fraser, a lump sum payment of more than $600,000 when he retired to Nareen.

And he is not the only one. Several other Federal MPs opted for retirement and big golden handshakes after the March 5 election.

And, of course, we should not forget that both federal and state public servants have similar schemes and their participation in this largesse is essentially at the taxpayers' expense.

They are the privileged. Most Australians are denied these benefits.

This intolerable situation has not escaped the attention of the Prime Minister, Mr Hawke, who has described the existing Federal MPs' scheme as "excessively generous" and "indefensibly self-indulgent" and has announced some proposed changes.

That's a step in the right direction, but now the Treasurer, Mr Keating, has decided to muddy the waters a little more by announcing that a 30 per cent tax will be imposed on lump sum superannuation payments and a means test will be applied on age and service pensions for persons aged 70 or more.

A brave decision, but one that will reap the Hawke Government a whirlwind. The groundswell against these mini-Budget moves is already evident and it must be a little chastening for the new Government to see that most of it is coming from the union movement.

Successive governments have persisted in attempting to patch up the social welfare system in Australia. Most have failed abysmally.

If a national superannuation scheme had been introduced years ago we would be free of the current difficulties.

The Life Insurance Federation of Australia presented an excellent case to the Fraser Government in 1981 for a national superannuation scheme.

It suggested that all Australians at age 65 should receive a national superannuation pension. This would replace the present age pension and the standard benefit rate would equal 50 per cent of average weekly earnings for a married couple and 30 per cent for a single person.

The present age pension is about 39 per cent for a married couple and around 23 per cent for a single person.

LIFA suggested that the married rate of benefit would become payable to a couple as soon as the husband or wife reached 65. It proposed that the level of payments be tied to average weekly earnings in order to provide automatic protection against inflation.

Under its proposal, two-thirds of the national superannuation benefit would be free from any means test, and the balance would be subject to a test which would take account of a person's assets as well as income.

Obviously this would be much fairer than the present test which assesses only income.

If the LIFA plan had been fully operational in 1980-81, the additional cost to Australian taxpayers would have been about $1100 million.

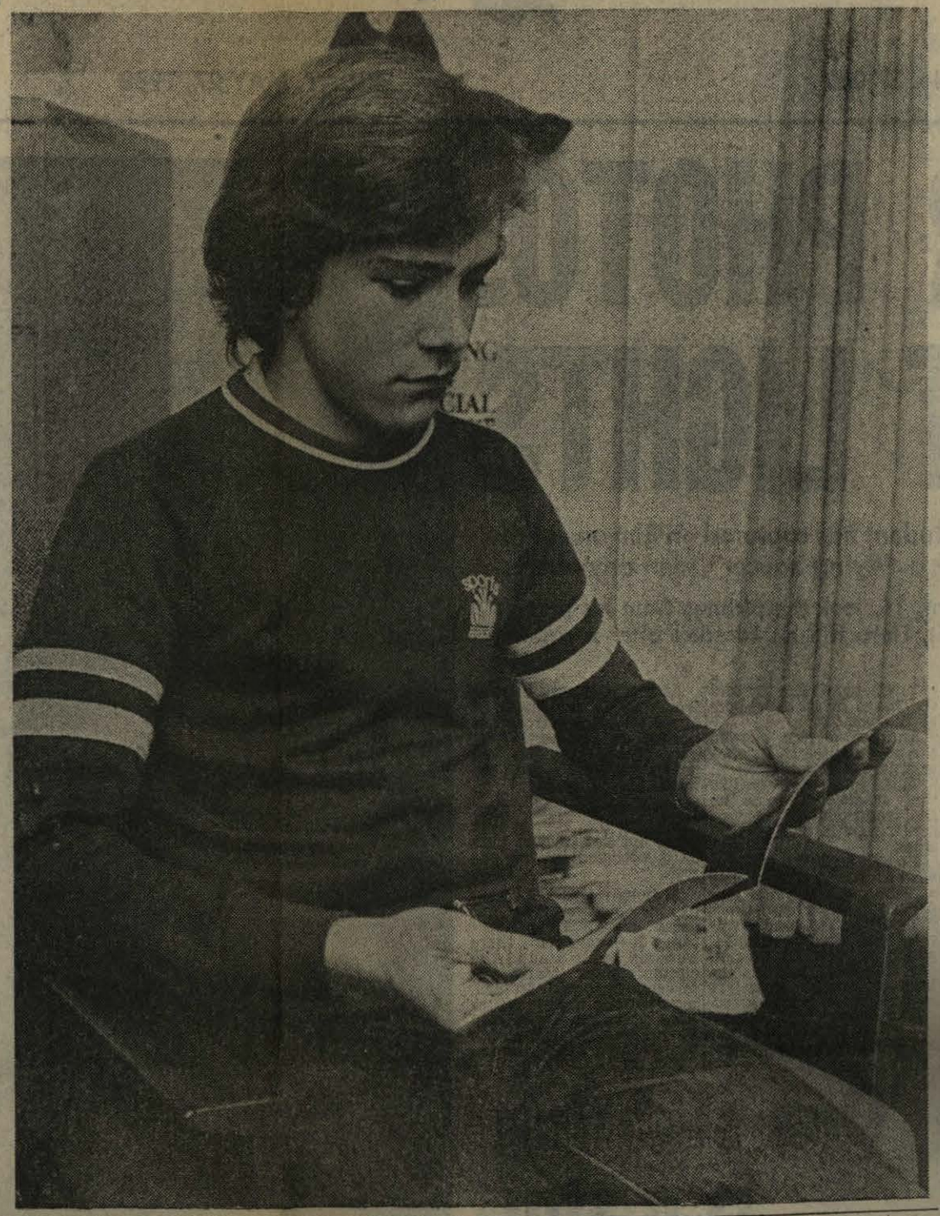
There is certainly a case for national superannuation in Australia, just as there is a need to introduce a reform which will provide for the portability of superannuation benefits.

But will the Hawke Government have the courage to introduce such a scheme?

Only time will tell. Meanwhile, all of us will have to put up with the present hodge-podge of frustrating and unfair pension and superannuation arrangements.



Schoolboy catches UFO on film



● LEFT: Young photographer Russell Henthorn, 16, holds photographs of one of the unidentified flying objects which have been seen over Bendigo recently.

MAGNETIC STORMS

Yesterday a spokesman for the ionosphere prediction service of the Science and Technology Department said there had been storms on the sun during the period starting May 21 and ending last Tuesday.

He said the storms were due to "a fair amount of sunspot activity."

The storms caused the emission of energy from the sun in the form of light, X-rays and charged particles which cause magnetic storms on earth.

Among other things they can cause the appearance of the Aurora australis and interference with certain radio transmissions.

Upsurge

The spokesman said the present upsurge of activity was not unusual.

Although the 11-year sunspot cycle had reached its maximum a couple of years ago and was now on the decline there had been sunstorms recently, "a couple of times a month."

He did not think there could be any connection between the sunspot activity and the appearance of strange objects in the sky.

In Melbourne, Mrs Judith Magee, president of the Victorian UFO Research Society, said she had no doubt the objects seen in the sky were not from this planet.

"They are obviously controlled by an intelligence, either manually or as robots," she said.

She said there was nothing really unusual about the visitation, although there had been a dearth of sightings in Victoria in recent years.

Mrs Magee said there had been similar visitations all through history from ancient times to the present.

"Alexander the Great's army was disbanded on three occasions by similar objects," she said, "although they called them flying shields in referred to them as "fiery chariots" and those times."

She said the Bible more recently Pacific islanders described them as "Tilley lamps in the sky."

MLC's claims denied

Police and Emergency Services Minister, Mr Mathews has dismissed as "emotional" claims by Mr Bruce Reid, MLC (Bendigo) that the State Government was letting the police force run down.



● Mr Reid

Mr Mathews said the Government was fulfilling its promise to give extra support to the

SCHOOL FOR DEAF CHANGES HANDS

McDonald House School for Deaf Children will come under the umbrella of the Victorian Education Department in July.

President of the school's committee, Mr Ian Benjamin, said McDonald House had decided on the move to secure the best type of education for hearing impaired children in the

volving arduous man-hours by supporters of the school will now be managed by the Education Department," Mr Benjamin said.

Mr Benjamin said the decision followed 12 months

Emergency house may be swapped

muddy the waters a little more by announcing that a 30 per cent tax will be imposed on lump sum superannuation payments and a means test will be applied on age and service pensions for persons aged 70 or more.

A brave decision, but one that will reap the Hawke Government a whirlwind. The groundswell against these mini-Budget moves is already evident and it must be a little

need to introduce a reform which will provide for the portability of superannuation benefits.

But will the Hawke Government have the courage to introduce such a scheme?

Only time will tell. Meanwhile, all of us will have to put up with the present hodgepodge of frustrating and unfair pension and superannuation arrangements.



Manned crossing

• NO chance of being run over by a car on the way to school, now!

Bendigo's Barnard St school crossing will be manned for the next three weeks to see whether a manned crossing encourages a greater number of children to use it.

Bendigo City Council is subsidising the crossing supervisor and may consider making the appointment permanent if child numbers warrant it.

SEC notebook

FEEL THE WARM

I don't know how they herald winter where you live, but in our house it's by the flapping of trusty electric blankets being taken out from summer storage.

But before putting blankets to bed this winter, let's give them the attention they deserve.

Electric blankets must meet strict safety standards before they can be sold. Despite this, statistics show that some fires in Melbourne have been attributed to electric blankets. Most if not all of them could have been prevented.

About half the reported cases of scorching and fire have occurred during the daytime, after electric blankets have been left on for some time and unattended.

Each blanket sold carries the manufacturer's instructions. These should be read carefully and followed. If you've had your blanket for some time, you've probably lost them or thrown them away.

The SEC has a free booklet entitled "The Safe Use of Electric Blankets" and it's

That's entertainment

ABEV1
8.00: Sesame Street
9.00: Playaway
9.30: Play School
10.20: Mathshow
11.20: Sentinels of Silence
11.50: Go Health
12.00: Shakespeare in Perspective
1.00: News.
1.10: Weather.
3.00: Sesame Street
4.00: Play School
4.30: Alexander Bunyip's Billabong.
4.35: The Amazing Adventures of Morph.
4.40: The Leather Stocking Tales.
5.00: Buzz.
5.05: Famous Five.
5.30: Battle of the Planets
5.54: Come and Get It
5.58: News Headlines
6.00: The Goodies.
6.30: Dr Who
6.54: Regional News
7.00: News, Sport and Weather
7.30: The Two Ronnies
8.10: Nationwide
8.40: For One Night Only
4.00: Wombat
4.30: Beating Around the Bush.
4.55: Cartoons
5.00: Get Smart
5.30: The New Price Is Right.
5.55: Newmarket Stock Report
6.00: News and Weather
6.30: National News
7.00: Sale of the Century.
7.30: Knight Rider
8.30: Movie: "The Ravine".
10.15: Tales of the Unexpected.
10.45: Living Tomorrow
11.00: FA Cup.
1.30: Close.

BTV6
11.00: Here's Humphrey
11.55: News
12.00: The Mike Walsh Show
1.30: Days of Our Lives
2.20: Real Estate Guide
2.30: The Young and the Restless.
3.20: Here's Lucy.

TODAY'S TV

The magic created by the artist, writer, actor and magician will be exposed to ABEV1 viewers tonight at 8.40 pm in "For One Night Only."

Shirley Maclaine will host this first episode of "For One Night Only."

Gregory Hines will appear with Shirley Maclaine.

The British comedy about the trials of married life, "Yes—Honestly" will begin at 9.55 pm on ABEV1.

Michael pursues an elusive counterfeiter in a supposedly crime-free community in tonight's episode of "Knight Rider." His efforts are thwarted by local police when he is arrested and jailed.

"Knight Rider" begins at 7.30 pm.

"The Ravine," tonight's TV8 movie, tells the story of a young German soldier sent to capture a Yugoslav sniper during World War 2. He makes the tragically human mistake of falling in love with her. This movie begins at 8.30 pm.

A replay of the FA Cup final can be seen at 11 pm on TV8.

MLC's claims denied

Police and Emergency Services Minister, Mr Mathews has dismissed as "emotional" claims by Mr Bruce Reid, MLC (Bendigo) that the State Government was letting the police force run down.



● Mr Reid

Mr Mathews said the Government was fulfilling its promise to give extra support to the police force.

He said the Government was keeping its promise to increase effective police strength by 1000 in the first three years and had already introduced a third of the recruits to the force.

The Treasurer, Mr Jolly, has asked all departments to review expenditure, but Mr Mathews said this would not result in any loss of jobs in the police force.

He said the force has new recruitment methods and intakes would continue through the Glen Waverley Training Academy. He said there were two intakes in May and another was expected on June 27.

In Monday's Bendigo Advertiser, Mr Reid said the Government was not giving the police force the support it urgently needed.

He said the Government had not fulfilled its election promise to increase the strength of the force by 1000 and it had ordered cutbacks in expenditure.

'Marxists control the land rights movement'

A former Communist Party member, Mr Geoff McDonald, claimed in Bendigo last night a group of Marxist revolutionaries had taken control of the Aboriginal land rights movement.

Mr McDonald made his comments to about 40 people at a public meeting at the RSL Hall.

Mr McDonald said he had a deep respect for the genuine Aboriginal people.

"But the voices we hear that are said to represent Aboriginals in Australia, are not representative of the majority. The majority is being manipulated by a handful of communist activists speaking in the Aboriginal name," he said.

Mr McDonald said the aim of the group was to create an independent nation of Aboriginals which would be recognised by the United Nations.

"They want national sovereignty, the right to negotiate agreements with Australia and overseas," he said. "This represents a threat to Australia defence and security," Mr McDonald said.

Mr McDonald said one of his chief concerns was the manufacture of sacred Aboriginal sites as an excuse to hold up industry.

He said the Franklin dam and the Portland aluminium smelter were just two of hundreds of projects being held up because sacred sites were claimed to be in the area.

"We could get Australia out of the current economic crisis if these projects could get underway — there would be work for thousands," he said.

He urged Bendigonians to contact their local politicians and councillors to protect these areas, and the genuine Aboriginal people.

"We are in for a first class political explosion, one which is sure to shock many Australians, if these activists are not checked," he said.

Test-tube twins

An Aboriginal wo-

SCHOOL FOR DEAF CHANGES HANDS

McDonald House School for Deaf Children will come under the umbrella of the Victorian Education Department in July.

President of the school's committee, Mr Ian Benjamin, said McDonald House had decided on the move to secure the best type of education for hearing impaired children in the north-central region.

The transfer of the school to the Education Department would give McDonald House all the advantages state schools now enjoyed, he said.

McDonald House has received Treasury Department funding and private backing since its establishment in 1952.

"The committee believes the range of facilities available to the staff and students will improve with the transfer, teachers' career possibilities will be considerably enhanced and many of the functions involving arduous man-hours by supporters of the school will now be managed by the Education Department," Mr Benjamin said.

Mr Benjamin said the decision followed 12 months of negotiations between the school and the Education Department through the regional director of education, Mr Doug Weir.

Bendigo MLC, Mr Bruce Reid and Bendigo MLA, Mr David Kennedy, had been involved in the discussions and had assured the committee it was the policy of their respective parties to maintain McDonald House as a school for deaf children in Bendigo, he said.

Mr Benjamin said the committee was anxious that members of the public fully understood that the entry of the department would not greatly change the financial responsibilities of the school committee.

Under McDonald House's status as a "special school" a grant of up to $2500 could be expected, but this would fall far short of the cost of providing equipment and other aids for deaf children, he said.

• The annual McDonald House Appeal will be held on Sunday, June 19. Donations can be made at any branch of the Bendigo-Sandhurst Building Society. Anyone available to help appeal organisers should contact the school principal, Mr Michael Egan, at McDonald House, Edwards Rd, Bendigo (43 3062).

Emergency house may be swapped

Residents of Fifth Ave, White Hills, seem to have won in their efforts to stop the Housing Ministry from using a house in their street for emergency accommodation.

Housing Minister, Mr Cathie, has promised the residents he will consider buying another house for emergency use and placing permanent tenants in the White Hills house.

The residents petitioned the State Government to look elsewhere for an emergency house shortly after the Ministry bought the Fifth Ave house for use by the Bendigo Urban Emergency Accommodation Resource Centre.

They wrote a letter of protest to Mr Cathie in March when three women and their children were sharing the emergency house.

It was claimed the tenants had been in the house only one night when the husband of one arrived and threatened to kill his wife who fled into a neighbor's for protection.

The residents said the husband appeared to be drunk and entered neighboring backyards without permission, using bad language and threatening violence with anyone who went near him.

They went on to say a survey of the street showed a majority of young married couples with some 40 young children within a radius of 200 metres of the emergency house.

The residents said they realised there was a need for emergency housing and they had no objection to a family being placed there permanently.:

They said they were not informed that the house was to be used by unsupervised tenants staying for periods up to six weeks only.

The residents said they thought women requiring halfway house type accommodation would be better served in a house with a resident supervisor to provide them with some security.

"A house with a supervisor would remove the need for neighbors to act as unofficial policemen and the fear of unknown people who may be seeking their wives and children in the house," they said.

WALKER LAUNCHES RETAIL PLAN

The Planning Minister, Mr Walker, will visit Bendigo today to launch the controversial Bendigo sub-regional retail strategy plan.

couple of times a month."

He did not think there could be any connection between the sunspot activity and the appearance of

"fiery chariots" and those times."

She said the Bible more recently Pacific islanders described them as "Tilley lamps in the sky."

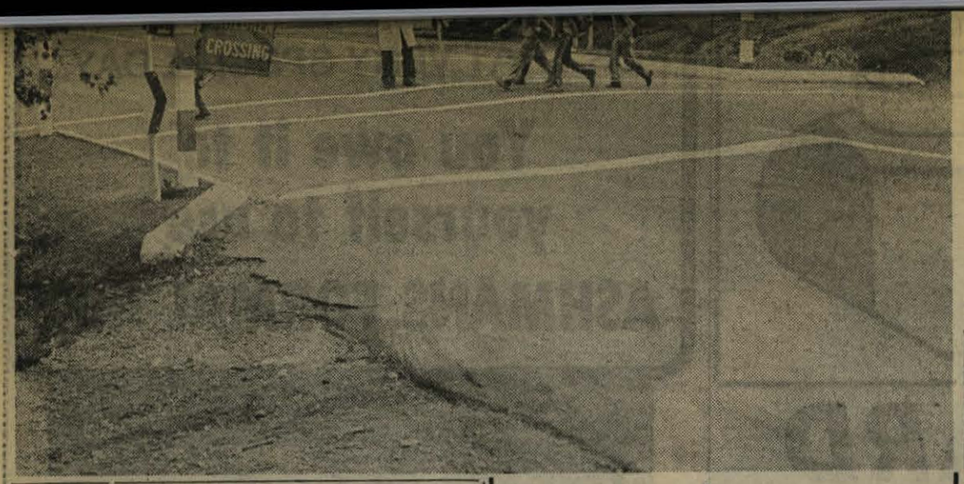
CHAIN SAWS



15 GREAT MODELS ECHO

TOP DEALS

WE SERVICE
WE TRADE-IN



Manned crossing

• NO chance of being run over by a car on the way to school, now!

Bendigo's Barnard St school crossing will be manned for the next three weeks to see whether a manned crossing encourages a greater number of children to use it.

Bendigo City Council is subsidising the crossing supervisor and may consider making the appointment permanent if child numbers warrant it.

He said the Government was keeping its promise to increase effective police strength by 1000 in the first three years and had already introduced a third of the recruits to the force.

The Treasurer, Mr Jolly, has asked all departments to review expenditure, but Mr Mathews said this would not result in any loss of jobs in the police force.

He said the force has new recruitment methods and intakes would continue through the Glen Waverley Training Academy. He said there were two intakes in May and another was expected on June 27.

In Monday's Bendigo Advertiser, Mr Reid said the Government was not giving the police force the support it urgently needed.

He said the Government had not fulfilled its election promise to increase the strength of the force by 1000 and it had ordered cutbacks in expenditure.

The transfer of the school to the Education Department would give McDonald House all the advantages state schools now enjoyed, he said.

McDonald House has received Treasury Department funding and private backing since its establishment in 1952.

"The committee believes the range of facilities available to the staff and students will improve with the transfer, teachers' career possibilities will be considerably enhanced and many of the functions in-

of negotiations between the school and the Education Department through the regional director of education, Mr Doug Weir.

Bendigo MLC, Mr Bruce Reid and Bendigo MLA, Mr David Kennedy, had been involved in the discussions and had assured the committee it was the policy of their respective parties to maintain McDonald House as a school for deaf children in Bendigo, he said.

Mr Benjamin said the committee was anxious that members of the public fully understood that the entry of the department would not greatly change the financial responsibilities of the school committee.

Under McDonald House's status as a "special school" a grant of up to $2500 could be expected, but this would fall far short of the cost of providing equipment and other aids for deaf children, he said.

• The annual McDonald House Appeal will be held on Sunday, June 19. Donations can be made at any branch of the Bendigo-Sandhurst Building Society. Anyone available to help appeal organisers should contact the school principal, Mr Michael Egan, at McDonald House, Edwards Rd, Bendigo (43 3062).

'Marxists control the land rights movement'

A former Communist Party member, Mr Geoff McDonald, claimed in Bendigo last night a group of Marxist revolutionaries had taken control of the Aboriginal land rights movement.

Mr McDonald made his comments to about 40 people at a public meeting at the RSL Hall.

Mr McDonald said he had a deep respect for the genuine Aboriginal people.

"But the voices we hear that are said to represent Aboriginals in Australia, are not representative of the majority. The majority is being manipulated by a handful of communist activists speaking in the Aboriginal name," he said.

Mr McDonald said the aim of the group was to create an independent nation of Aboriginals which would be recognised by the United Nations.

"They want national sovereignty, the right to negotiate agreements with Australia and overseas," he said. "This represents a threat to Australia defence and security," Mr McDonald said.

Mr McDonald said one of his chief concerns was the manufacture of sacred Aboriginal sites as an excuse to hold up industry.

He said the Franklin dam and the Portland aluminium smelter were just two of hundreds of projects being held up because sacred sites were claimed to be in the area.

"We could get Australia out of the current economic crisis if these projects could get underway — there would be work for thousands," he said.

He urged Bendigonians to contact their local politicians and councillors to protect these areas, and the genuine Aboriginal people.

"We are in for a first class political explosion, one which is sure to shock many Australians, if these activists are not checked," he said.

to have won in their efforts to stop the Housing Ministry from using a house in their street for emergency accommodation.

Housing Minister, Mr Cathie, has promised the residents he will consider buying another house for emergency use and placing permanent tenants in the White Hills house.

The residents petitioned the State Government to look elsewhere for an emergency house shortly after the Ministry bought the Fifth Ave house for use by the Bendigo Urban Emergency Accommodation Resource Centre.

They wrote a letter of protest to Mr Cathie in March when three women and their children were sharing the emergency house.

It was claimed the tenants had been in the house only one night when the husband of one arrived and threatened to kill his wife who fled into a neighbor's for protection.

The residents said the husband appeared to be drunk and entered neighboring backyards without permission, using bad language and threatening violence with anyone who went near him.

They went on to say a survey of the street showed a majority of young married couples with some 40 young children within able trusts, which have a radius of 200 metres of the emergency house.

The residents said they realised there was a need for emergency housing and they had no objection to a family being placed there permanently.:

They said they were not informed that the house was to be used by unsupervised tenants staying for periods up to six weeks only.

The residents said they thought women requiring halfway house type accommodation would be better served in a house with a resident supervisor to provide them with some security.

"A house with a supervisor would remove the need for neighbors to act as unofficial policemen and the fear of unknown people who may be seeking their wives and children in the house," they said.

WALKER LAUNCHES RETAIL PLAN

The Planning Minister, Mr Walker, will visit Bendigo today to launch the controversial Bendigo sub-regional retail strategy plan.

That's entertainment

ABEV1
8.00: Sesame Street
9.00: Playaway
9.30: Play School
10.20: Mathshow
11.20: Sentinels of Silence
11.50: Go Health
12.00: Shakespeare in Perspective
1.00: News.
1.10: Weather.
3.00: Sesame Street
4.00: Play School
4.30: Alexander Bunyip's Billabong.
4.35: The Amazing Adventures of Morph.
4.40: The Leather Stocking Tales.
5.00: Buzz.
5.05: Famous Five.
5.30: Battle of the Planets
5.54: Come and Get It
5.58: News Headlines
6.00: The Goodies.
6.30: Dr Who
6.54: Regional News
7.00: News, Sport and Weather
7.30: The Two Ronnies
8.10: Nationwide
8.40: For One Night Only
9.30: Sow What.
9.45: Late News and Weather
9.55: Yes — Honestly
10.20: The Footy Show
10.50: International Pro-Celebrity Golf
11.40: Close.

TV8
11.00: Thought for the Day
11.05: Fat Cat and Friends
11.35: Ed Allen Show
12.00: The Mike Walsh Show
1.30: Community Billboard
1.35: Days Of Our Lives
2.30: Young and the Restless
3.30: The Debbie Reynolds Show
4.00: Wombat
4.30: Beating Around the Bush.
4.55: Cartoons
5.00: Get Smart
5.30: The New Price Is Right.
5.55: Newmarket Stock Report
6.00: News and Weather
6.30: National News
7.00: Sale of the Century.
7.30: Knight Rider
8.30: Movie: "The Ravine".
10.15: Tales of the Unexpected.
10.45: Living Tomorrow
11.00: FA Cup.
1.30: Close.

BTV6
11.00: Here's Humphrey
11.55: News
12.00: The Mike Walsh Show
1.30: Days of Our Lives
2.20: Real Estate Guide
2.30: The Young and the Restless.
3.20: Here's Lucy.
3.45: Cartoon Corner
4.00: Shirl's Neighborhood.
4.30: Skippy.
5.00: Diff'rent Strokes
5.30: The New Price Is Right
5.55: Stock Market Report
6.00: News.
7.00: Sale of the Century
7.30: The Greatest American Hero.
8.28: Weather Report
8.30: Knight Rider
9.30: Prisoner.
10.30: Movie: "The McCullochs".
12.10: Late News
12.40: Epilogue and Close

TODAY'S TV

The magic created by the artist, writer, actor and magician will be exposed to ABEV1 viewers tonight at 8.40 pm in "For One Night Only."

Shirley Maclaine will host this first episode of "For One Night Only."

Gregory Hines will appear with Shirley Maclaine.

The British comedy about the trials of married life, "Yes—Honestly" will begin at 9.55 pm on ABEV1.

Michael pursues an elusive counterfeiter in a supposedly crime-free community in tonight's episode of "Knight Rider." His efforts are thwarted by local police when he is arrested and jailed.

"Knight Rider" begins at 7.30 pm.

"The Ravine," tonight's TV8 movie, tells the story of a young German soldier sent to capture a Yugoslav sniper during World War 2. He makes the tragically human mistake of falling in love with her. This movie begins at 8.30 pm.

A replay of the FA Cup final can be seen at 11 pm on TV8.

ARREST ORDERED

The Bendigo Court yesterday issued a warrant to arrest Grant Rutherford, 22, of Neale St, Bendigo for failing to appear in court.

Rutherford was bailed to appear on charges of taking heroin and about 25 other theft, burglary and deception charges on May 5.

Last week Rutherford's father made application to be discharged from his responsibilites, having put up $750 surety. A warrant was issued to arrest Rutherford but he did not appear yesterday.

Rutherford's solicitor, Mr Laurie O'Farrell, said the family had received a phone call from Grant, but they did not know where he was.

"He is in a place many thousands of miles from Bendigo," Mr O'Farrell said. Mr J. R. Aitken, SM, said he would deal with the surety application another time. He issued a warrant for Rutherford's arrest.

Test-tube twins

An Aboriginal woman and her test-tube baby twins are doing well in Melbourne's Queen Victoria Medical Centre.

Mrs Carolyn Steel, 33, of Tooleybuc, gave birth to a boy and a girl Wednesday afternoon. The boy, Gheran, weighed 3.16 kg, and Jarra, the girl, weighed 3.44 kg, AAP reports.

Mrs Steel said she had given the twins names from the Wiradjuri tribe that inhabited areas along the Murray River.

SEC notebook

FEEL THE WARM

I don't know how they herald winter where you live, but in our house it's by the flapping of trusty electric blankets being taken out from summer storage.

But before putting blankets to bed this winter, let's give them the attention they deserve.

Electric blankets must meet strict safety standards before they can be sold. Despite this, statistics show that some fires in Melbourne have been attributed to electric blankets. Most if not all of them could have been prevented.

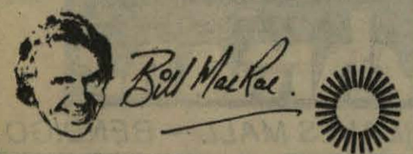
About half the reported cases of scorching and fire have occurred during the daytime, after electric blankets have been left on for some time and unattended.

Each blanket sold carries the manufacturer's instructions. These should be read carefully and followed. If you've had your blanket for some time, you've probably lost them or thrown them away.

The SEC has a free booklet entitled "The Safe Use of Electric Blankets" and it's available from your nearest SEC office.

It contains a lot of helpful information on the proper care and maintenance of electric blankets.

Do ask for a copy.



You've got a friend at the SEC

1229

CHAIN SAWS



CS 650 EVL

15 GREAT MODELS **ECHO**

TOP DEALS

WE SERVICE
WE TRADE-IN
WE SHARPEN

NORTHERN SEED SUPPLY

113 Williamson St. Bendigo Phone 43 4710

P.S. The new TWIN CYLINDER ECHO is on display now.

EXCLUSIVE

By
John Pinkney

UFO SHOW

Were the strange lights over Bendigo a deliberate display by alien spacecraft?



Russell Henthorn: UFOtographer.

SPECTACULAR NIGHT photographs of a mysterious unidentified flying object over rural Victoria have baffled the RAAF and thrown a scare into the hundreds of people who saw them.

Russell Henthorn, a 16-year-old technical college student, took the photographs at the height of the UFO sightings which swept Bendigo in May.

The air force's intelligence officers extensively tested Russell's negatives on sophisticated aerial reconnaissance equipment — and then passed me the enlargements shown here.

"Eventually we'll produce a theory," said Flight Lieutenant Brett Biddington, a special investigation officer.

"We know there was a temperature inversion over some parts of Victoria at that time, but not in Bendigo.

"So we are indeed puzzled — especially by the picture which seems to have a structure in it.

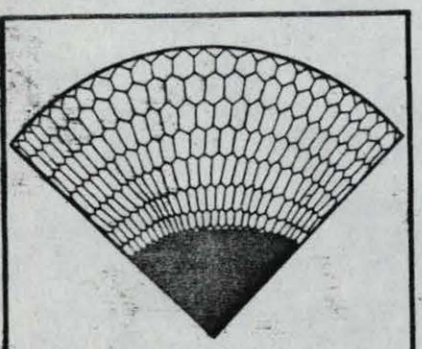
"This picture is clear and crisply in focus, and it appears to show three panels."

This negative was also analysed by Gerard Lie, senior photographic expert of Melbourne University's higher education department.

He called the photograph "the most fascinating and seemingly detailed shot of an alleged UFO I have ever seen."

It shows a circular object whose side panels are ablaze with red, blue and white lights.

From Castlemaine to Bendigo, hundreds of people rang newspapers and radio stations to report seeing similar cone-shaped, silvery objects with flashing coloured lights hurtling across the night sky that evening in May.



An artist's impression of the honeycomb-shaped UFO — similar to those in one of Pinkney's books.

And many witnesses, including 3BO announcer Mike Evans, said they had seen "honeycomb patterning" on the undersides of the UFOs.

An artist's impression of what Evans saw was published in the Bendigo Advertiser. It showed elongated hexagons — virtually identical to those described by Leonard Ryzman and I in our book Alien Honeycomb, published in 1979. The book described numerous cases of hexagon structures on UFOs.

And Pat Gildea, the Victorian UFO Society's research officer, now holds an actual photograph of a honeycomb-patterned UFO. The picture was taken over Bendigo during the day by a professional photographer and will be published after US computer analysis.

Like the flying saucers which presented themselves to a New Zealand television crew in 1979, the Bendigo UFOs appeared to be seeking publicity.

In three of the best documented sightings, they hovered outside a radio station, appeared to a professional photographer and presented themselves at a TV station.

Russell Henthorn had been playing table tennis with his brother in the backyard when he suddenly caught sight of something spinning in the sky.

He rushed inside to grab his camera, a Fujica STX, and yelled to his parents to come and look at the spectacle.

"The object was round, with six huge blue, yellow and red lights which kept whirling around the base," he said.

"It was moving very slowly, so I set up my tripod on the garage roof and left the lens open for long exposure."

Russell got his best photograph after his brother Gary rang from Melbourne. Gary, a radiographer, urged that the lens be left open for 10 minutes.

By Wednesday, May 25, scores of Melburnians were ringing the media to say they too had seen UFOs. And to Channel 7's delight, head cameraman Laurie Bowie caught one on film. He'd been alerted by a cleaner who'd said an object pulsating with coloured lights was hovering far above the station's studio block.

The resulting televised film showed a brightly-lit body, changing colour from white to green to red. And like the Bendigo UFOs, appeared to rotate.

"I've shot a lot of night footage," Laurie said, "but I've never seen anything like this before."

Mike Evans was similarly bemused. He said the station's lines were jammed with calls.

"What got to me most was that people wouldn't stop ringing and some of them sounded dead scared," he said.

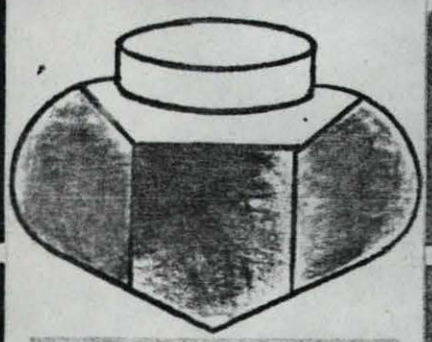
"One man was in total panic. He said a UFO had tailed his car from Long Gully into Bendigo — about 5km. The thing hovered directly above him, at about 70 degrees. He drove flat out to Bendigo, trying to escape it."

The UFOs had announced their puzzling presence a week earlier. Several motorists told me they had seen flashing lights over Lake Eppalock — but had thought little more about it until the major flap began.

Such seemingly deliberate displays are not uncommon in the history of UFO sightings. French physicist Jacques Vallee, who has probed the flying saucer mystery for more than 30 years, has an intriguing theory about them.

Vallee writes: "If a superior but benign civilisation were trying to prepare us for contact, might it not decide to cushion our race from cultural shock by teasing us for a long, preparatory period of time . . . by playing jokes on us, to accustom us to the idea that other intelligences might share our universe?"

FOOTNOTE: If you have photographed a UFO, please write or telephone me, John Pinkney, at PEOPLE.



The mystery UFO ... a cone-shaped, silvery object pulsating with coloured lights.

The white line shows the passage of the object as it moved through the sky. The UFOs were seen by hundreds of people.

In his enthusiasm to capture the UFO on film, Russell knocked his camera off the tripod, causing the jagged line.

Confluence

oracles of change

2



Confluence

oracles of change

CONTENTS

2 EDITORIAL

3 16 CELESTIAL ARTS

7 BODY AND SOUL

12 METAPHYSICAL SCIENCE RESEARCH

14 VIOLENCE!

18 PEOPLE, PLACES, IDEAS

20 UNITED NATIONS FEATURE

22 A MESSAGE FROM GOD

24 THE SAMURAI WARRIORS

27 HEALTH AND DISEASE
- ★ ILLNESS: SPIRITUAL CAUSES — SPIRITUAL CURES
- ★ MEDICINE AND MEDITATION
- ★ STRESS AND HEART DISEASE
- ★ POSITIVE HEALTH (A BOOK REVIEW)

37 THE DIVINE PLAY

39 PEACE PAGE

40 GHOST IN THE KREMLIN

Confluence

CONFLUENCE is published by the Brahma Kumaris World Spiritual University.

Editors: Robert Forbes
Lee McIvor

Design: Anthony Gosling

Cover Design: Gordon Fitchett
Barry Stern Galleries, Sydney

Photography: John Russell

Address for all Correspondence:
"Confluence"
606 Crown St.,
Surry Hills,
Sydney 2010
AUSTRALIA

© Copyright 1982
Brahma Kumaris World Spiritual University
The contents of this magazine are copyright.
Should you wish to reproduce any part of the magazine, please contact the editors.
All visuals remain the copyright of the artist or photographer.

Typesetting by:
Trade Typesetters Pty. Ltd.,
Canberra Australia.

EDITORIAL

In February this year we witnessed the "Planetary Alignment" or "Conjunction of the Planets" — that period during which all the planets in the solar system were positioned in a tight configuration on the same side of the sun.

The various media stories either warned us of impending earthquakes and tidal waves, or told us to "relax, nothing is going to happen".

Although there is a possibility that the "planetary alignment" will affect us eventually through the effect of solar flares on the earth's weather, it is more relevant for us to see just how much man is at the mercy of his environment everyday.

A constant barrage of advertising propaganda and peer group pressure encourages us to exist at the level of our drives of lust, arrogance and possessiveness, regardless of the consequences on our mental peace, or on harmony with others and the environment.

Over exposure to news of impending nuclear war is leading to a complacent acceptance of the inevitable in some, and a sense of paranoia or helplessness in others.

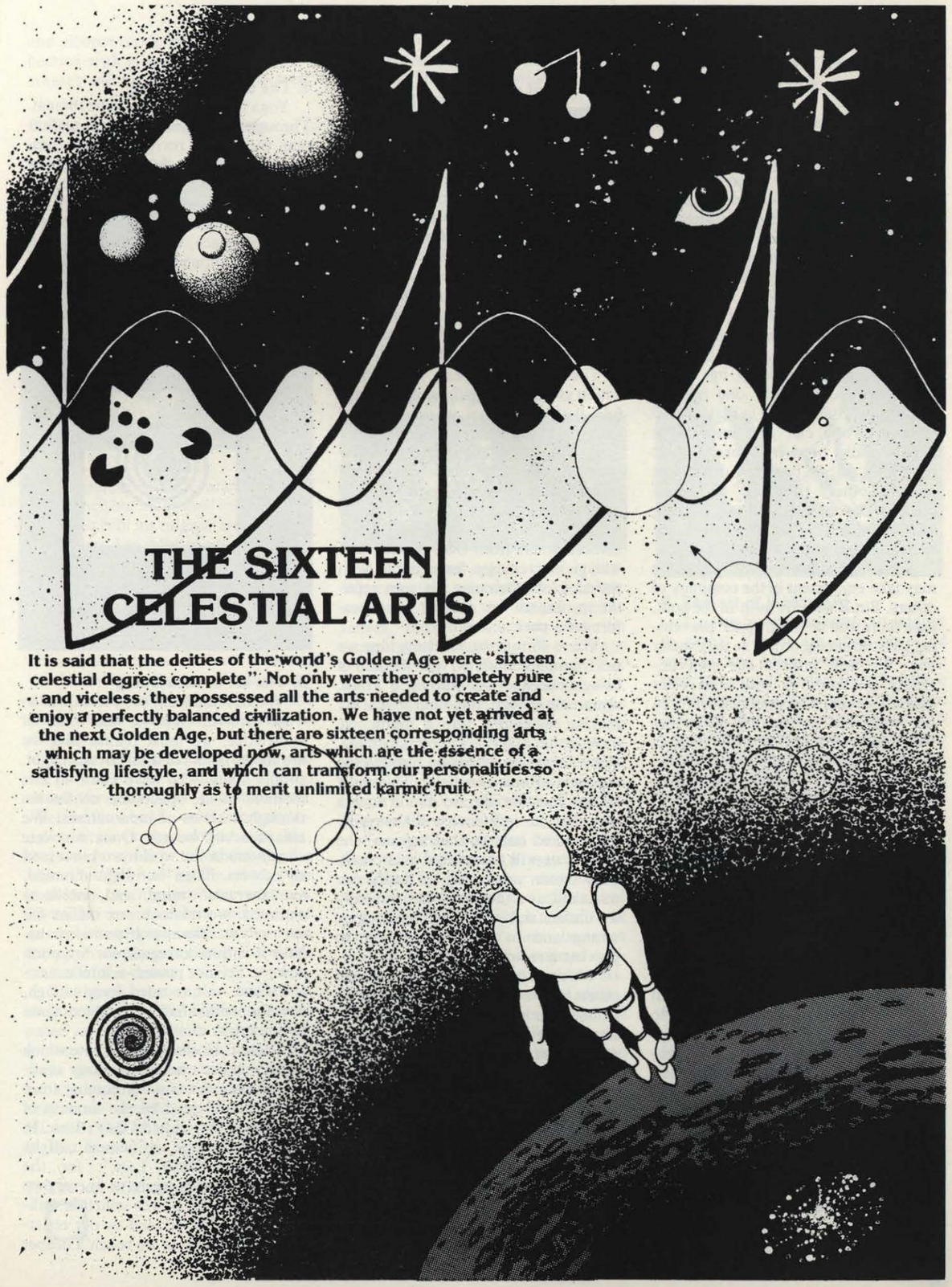
Even a downpour of rain in the city at lunchtime causes a seas of gloomy, bothered faces!

While the international news magazines continue to display front cover nuclear explosions, Confluence will continue to present a positive alternative which is as powerful as it is serene: simple yet satisfying the intellects yearning for rational understanding.

Change is inevitable and approaching within our lifetime.

But let us be still, understand the changes and then prepare for a positive future with the wealth of powers which we already have, but which have been hidden from us by the cloak of our various burdens, obligations, and mental obsession with material things.

Each person has the potential to be free, to realize the potential of the soul, and to exist in complete harmony with others.



1. The art of winning friends

Friendship is a relationship of trust. To be trustworthy, one must be honest.

Purity of thought, word, and deed make one supremely attractive to others. They know you want nothing from them, that you mean them no harm, and that you possess the inner strength of a completely inner-directed personality, impervious to the negative influences of others. Therefore, your judgement will be objective and your advice constructive.

A true friend will not lean on another. This detachment and independence may seem at first to be a barrier against friendship but when one looks more closely one realises that ultimately it is only in that refined state that one can give most what people really need from each other: pure love. If one becomes dependent on the other, then the vision of equality cannot last, and respect also will be lost. Friendship depends on the mutual giving and taking of regard.

When one is self-satisfied, then one may take enjoyment in the company of others. But if there is guilt in the soul, then there will be blind spots, preventing us from seeing others as they really are. We will project our own unreality on them. A soul with clear vision sees others in their perfect form, not with the personality blemishes which may temporarily afflict them in this one life. Through elevated vision, we may subtly encourage them to regain a higher state of mind.

2. The art of dealing with others



The key to this art is understanding the balance between law and love. Neither to be so assertive and lawful that one becomes oppressive, nor to give in so much that one becomes oppressed. One must understand the requirements of a situation and not hesitate to fulfil them. We can only give our best, and then if something does not seem to work out, so be it.

Tolerance is the first power to inculcate, leading to accommodation to the ways of others, and to accurate judgement of the response needed. The power to face adversity and opposition is necessary in extreme situations.

3. The art of reforming



The art of reforming encompasses all situations. In the first instance of course, one must re-form oneself. Through self-reformation, world reformation may be achieved. To accomplish the former, we work on all subtle facets of the personality in action, until we have achieved a perfect interface of self to world.

The Buddhists speak about right action as one of the pillars of the eightfold path. But what is right action? One must not merely *do* the right thing, but do it in the right *consciousness.* If one acts with any wrong motive, with any desire for the limited self, then it means one is divorced from God, and the effect will be to divorce others from God as well. One who gives to charity, for example, with the idea of enhancing his own reputation, cannot be said to have performed a pure action.

We re-form a situation any time we act from pure motives, with the aim of bringing another soul closer to Truth, remaining in that stage ourselves. By making an enemy into a friend, we have done a great act of reforming. We reform automatically through the example of our own lives. This must be our constant aim: to live in such a way that our influence will always be an elevated one, so that anyone who follows us will be uplifted as a result. This means not trying to justify our mistakes, as a lawyer would, but truly to understand what we have done wrong and to have the power to prevent a repetition of it.

We must be flexible in dealing with others as well, so that we help them achieve the self-reformations they desire in themselves; being careful not to alienate them through arrogance. Such beneficial influence is based on mutual trust. Then by peacefulness and tolerance, by sustained strength and firmness of principle toward one's own development, you will automatically move others to transform their lives as well. One must understand the structure of human virtues, how they are inculcated, how they were lost through impurity, and how they may be gained once more.

4. The art of refreshing

Yoga itself is the art of refreshment. Through this highest form of meditation, the soul is revived, rejoiced, refilled with energy; the traces of sorrow are literally burned away, the burdens of the past removed forever from the heart and mind. In the sweet, silent world of peace, the soul experiences the most profound serenity; simply by remembrance of its original state of utter quietude, there is refreshment and renewal.



5. The art of developing

We develop from seed to flower to fruit. Growth calls for the water of knowledge: we must realise that we are seeds, points of transphysical light, simply souls, who have come to this moment in the spacetime continuum through a series of incarnations. We are immortal beings. Once we were masters of the world: we possessed all powers. Then our light dimmed, our servants (mind and intellect) mutinied: we mistook our bodies for our selves; desires hypnotised us. Now it is time to regain our forgotten powers. Science power — intellect externalised — has ruled long enough, now the world shall be subdued again by the might of silence.

There is in electronics a law which states that the amount of energy available equals the amount coming from the source divided by the amount of resistance. It is called Ohm's Law. In Yoga psychology, we could call its equivalent "Om's Law": for the amount of power we have in our own lives equals the power which is radiating from God divided by our resistance to Him. So as we reach a deeper and deeper understanding and connection with Him, our own power increases and we develop in every way.

6. The art of remaining happy and contented



Happiness is not a function of circumstance but of internal mental state. One who is in his original stage of consciousness, the stage of enlightenment, of being merged in love with the Supreme, will be impervious to circumstance no matter how adverse or painful.

What exactly is this mental state? How do such souls who have achieved this blessed steadiness and equanimity think about their own roles in the world? What secrets of this drama do they know?

In the first place, they understand the laws of action. Karma is composed of all the actions of a human soul, whether they be the most overt physical motions or the subtlest thoughts, the words spoken to others or the vibrations given off by the mind, even in dreams. Actions produce reactions. So to be aware of how this web of interrelationships manifests here on the physical plane makes the soul the master of the drama.

To have created for oneself a divinised nature, and to have participated in such a project of upliftment for the world as a whole, makes the soul contented and happy in the knowledge that he has worked for the very ends desired by the Supreme Himself. One is in harmony with the highest laws of the cosmos.

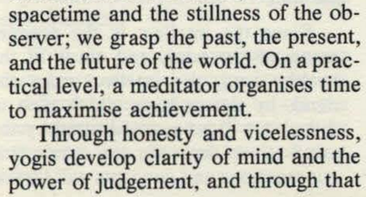
7. The act of keeping others happy



It is true that the first requisite in keeping others happy is to be happy oneself. This will provide the most natural and constant inspiration to all those who come in contact.

In order to relate to another properly, we must be egoless. We must require no feedback or gratification from another. This detachment will allow us to remain loveful despite the changes of circumstance. In that stage of lovefulness, we can give each soul the respect that it truly deserves. This vision of respect serves to encourage the other, to inspire trust and encourage happiness rather than sorrow.

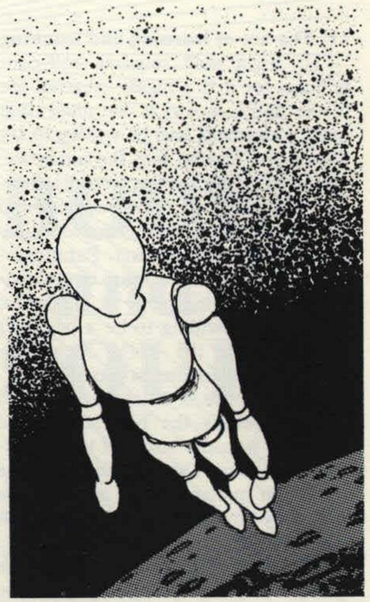
8. The art of organising



A soul is an organiser of reality. We order the perceptions of colour and form, of all the data from the senses, into the concepts and the meanings of our reality. We arrange the hierarchy of phenomena so that space and time may be negotiated, fashioning our own role in this game according to the principles of our understanding. This task of organising continues constantly on many levels. Organising means determining our identity and our priorities. Each reinforces the other.

To organise we must concentrate. For this we need a quiet mind, unruffled by the raging manifold of sense perceptions and the influence of psychic vibration which assails us constantly. This in turn becomes possible by entering the state of self-awareness called soul consciousness. To organise the self, we first distinguish the self from the body and the elements of nature. We gain the necessary distance from the world to see it accurately. And we grasp the destination of all action, the flow of spacetime and the stillness of the observer; we grasp the past, the present, and the future of the world. On a practical level, a meditator organises time to maximise achievement.

Through honesty and vicelessness, yogis develop clarity of mind and the power of judgement, and through that they cut through the jungle of details and arrive at the heart of every matter which they must face.



9. The art of leadership

Leadership is a mysterious quality to many. People are often obsessed with gaining power over others. They wish to be great leaders, but they have trouble getting others to follow them. And yet, there are some persons who are asked to assume leadership. These observations show that power is something generated within the soul, not conferred by external office or hereditary titles.

Leadership must be a combination of inner strength and balanced love. To have inner strength means one's intellect is focussed, able to determine and act according to the equities of a situation and the lines of force which subsist below the surface of human events. Moreover, the one who wishes to lead must understand that leading is serving.

10. The art of administration

Administration is a different art from leadership, although the two are naturally related. It requires the ability and self-confidence to delegate responsibility. This means seeing the specialities of others and encouraging them to realise their own strengths. It means keeping the balance of love and law, making sure the line of authority is adhered to, but with a gentle hand

and an encouraging word. To administer any operation will take a firmness under pressure and unwavering clarity of purpose.

11. The art of learning and teaching

To learn well requires self-confidence, for it is a highly creative use of the mind, in which one must trust one's judgement and be willing to try new ways, to step into the unknown, and even while learning, to discriminate which are the right teachings and the right teachers and whom to follow on the path of education. Paradoxically, self-confidence must be accompanied by putting away of one's ego; one must be willing to be a beginner again, to see the world anew, unclouded by emotions or past beliefs.

The practice of extreme clarity, of purity, itself is the highest form of learning; it is the stage of transcendence, of being able to take only the best from human beings, and to learn not only from human beings, but directly from God.

To teach is to give, to flow as a river, to require nothing in return. The teacher transforms his students by example, he is the sculptor of the personality, the master artist of happiness.

12. The art of enjoying work and leisure

To a yogi, all of life is his work, and work is his leisure. The work place is also a testing ground, for it enables the yogi to know how far he has truly gone on the pilgrimage of self-transformation. The various tests of one's patience, cooperation, detachment, and judgement, enable the soul to know himself, and through knowledge and effort, become stronger. By facing the examinations of worldly life, he can grow more rapidly than if he merely sat in an isolated cave and meditated. It is a rare achievement to be able to steer through the shark infested waters of urban existence and still remain firm in one's purity. Only by such a double existence can the world be served. Others will take benefit from such a person's stage and his words and actions.

To a yogi there is no leisure while even one human soul requires upliftment. And yet, the yogi experiences complete leisure, a leisure unknown to those whose understanding and focus is limited to the physical plane, for it is a leisure of pure and eternal silence. Silence is not mere emptiness or void, but is filled with light and might.

Leisure time, then, is the time of meditation, of repairing the mind and sending it up to our original home, of timeless peace. But since the Raja Yogi is also a family person, there are also parties and picnics and a life of happiness undiluted with any sorrow.

13. The art of speech and letter writing

To communicate well with others is a great virtue, for we live our lives with others. Even if we choose to isolate ourselves in a monastery or upon a mountain peak, there are always people who will cross our path and with whom we have to deal. We have friends who may be able to take great benefit from our wisdom or even just our love, and through speech or letters we can reach them with a well-turned, heartfelt phrase; we can explain our own experience, and we can develop new ideas for benefitting the world's unhappy souls.

14. The art of thinking and creating

All thought exists as a tree. The tree of our thoughts is based upon a few seed cognitions, and upon these the entire shape of our lives is formed and determined. As is the seedling bent, so grows the tree.

First one must know oneself as one truly is, to understand on the double basis of theory and practice the deep psychology of existence, and to develop the latent powers of the mind on the basis of this insight.

It is the power to concentrate which must be developed, and this ability increases naturally in the subtle state of soul consciousness.

Thought is the primal creation. When our thoughts are pure and perfect, then our words and actions will be pure. If there is to be creativity on the physical plane of life, there must be adequate energy. Our physical energy multiplies according to the inner motivations and inspirations of the soul.

Since the intellect is the premier organ of the soul, and since in the healthy soul, the intellect rules the mind, by determining which type of thoughts will be manufactured by the mind at any time, we can ensure that our emotions and concepts will flow in the desired direction. But we must be sure our intellect is master over our mental states. Then, even if we cannot reach immediate solutions to the problems on which we meditate, at least we shall have learned to focus upon those problems creatively, and since for every effort there must be fruit, by continuing faithfully to meditate we are guaranteed success. The soul which is aware of itself as a point of light will automatically be one-pointed, concentrated, still. And in that awesome and pure silence all manner of inspirations may arise. This is the golden vessel, the womb of pure thought.

15. The art of social service and spiritual welfare

The highest service is to share with others the joy of living. Through renunciation of arrogance and the egoistic impulses which cause personality clashes and animosities of every kind, the soul can serve the world in a very remarkable way. By restoring wholeness to his personality, he is serving as an example, a source of strength for others.

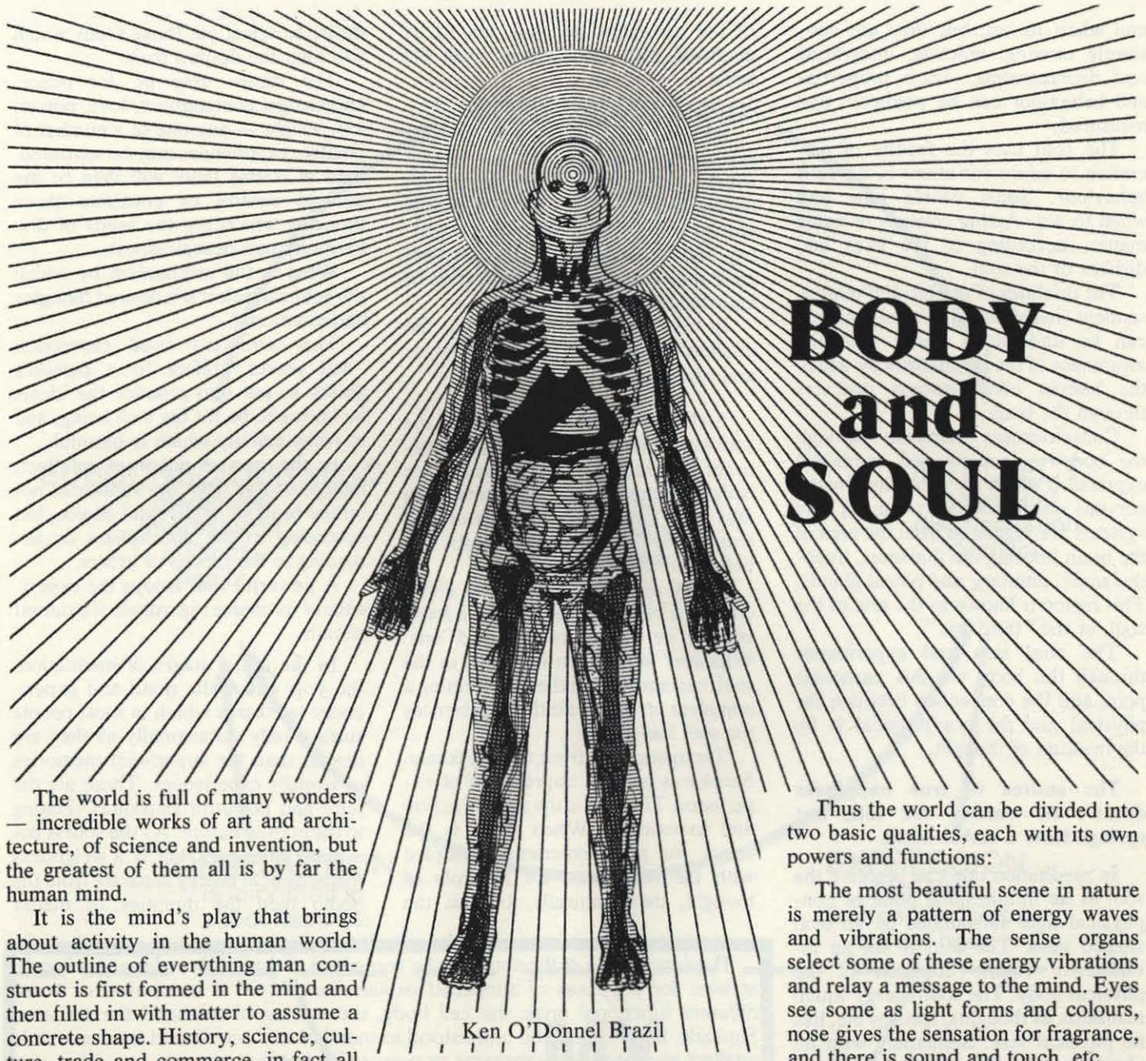
16. The art of concealing and revealing

Because our wisdom and experience are usually far richer than our ability to convey the same in words, our existence, like an iceberg, carries the greater part of itself submerged and unperceived by others. So automatically there is always some concealing. Our unspoken thoughts are not easily understood; our words also may contain an element of ambiguity and even our actions may be misinterpreted. But when all these levels are aligned — when our thoughts are the highest and our words and actions accurately reflect this, then we cannot help but reveal the true dharma, the Tao of life.

The attainment of these skills of course requires effort. But if the desire is there, and one follows the recipe, then mastery of one's own life is assured.



Robert Shubow San Francisco U.S.A.
Inspired by an essay written by B.K. Jagdish



BODY and SOUL

Ken O'Donnel Brazil

The world is full of many wonders — incredible works of art and architecture, of science and invention, but the greatest of them all is by far the human mind.

It is the mind's play that brings about activity in the human world. The outline of everything man constructs is first formed in the mind and then filled in with matter to assume a concrete shape. History, science, culture, trade and commerce, in fact all knowledge and activity of our day-to-day world is the projection of the human mind.

If then the mind by concentrating itself on matter, can work such wonders and attain such miraculous physical powers as we have today, what can it attain if it concentrates on itself.

What is the mind? The things we can see, hear, feel, taste and smell are formed of matter. But the subtle faculties of the mind and intellect are manifestations of what is called consciousness. Consciousness is an aspect of the soul, the spirit, the life energy, the life principle or personality.

The soul is a subtle entity that cannot be measured by physical process or instrumentation. The non-material part of each one of us exists and is in fact, the true self. But the soul is perceptible only at the level of mind and intellect.

With the physical eyes we can see only gross material things. It requires a different kind of vision to see the non-material, the experiences which transcend this physical level of existence.

Our mental state affects the body. When we are worried, harried by stray thoughts, we eat too much, drink too much, think too much. Our stomach, liver, kidneys suffer and we get a headache. These are temporary symptoms of states which if they exist over a period of time can result in permanent damage to the organs of the body.

Thus the world can be divided into two basic qualities, each with its own powers and functions:

The most beautiful scene in nature is merely a pattern of energy waves and vibrations. The sense organs select some of these energy vibrations and relay a message to the mind. Eyes see some as light forms and colours, nose gives the sensation for fragrance, and there is sound and touch, etc.

The human body is a complicated pattern of physical energies. Atomic particles build together to form the organic molecules and inorganic minerals which perform the body's chemical interactions — the basis of the hormonal and nervous control of the body. So what we see as old or young male or female, is also made of these differing levels of physical energies.

Atoms are non-living physical entities which are governed by the laws of time and space. Souls are living entities which are endowed with awareness. They are not bound by time and space but can travel anywhere, anytime, in the space of a thought.

Atoms do not reason or decide how

and when to act, but they are constantly moving, reacting, integrating and disintegrating. Their properties and behaviour can be predicted and measured.

The soul uses the faculty of discretion to cause variations in it's *own* behaviour. Souls decide how and when to act. Acting consists of using matter, according to the likes and dislikes of the soul.

The dualities of matter-anti matter, sentient-insentient, physical-spiritual can be understood easily with the awareness of the mechanism by which the human consciousness operates through the body.

Consciousness manifests through the body by actions and emotional expression which are controlled by the nervous and hormonal systems. These systems are regulated from the area of the brain housing the thalamus, hypothalamus, pituitary and pineal glands. This region is known as the seat of the soul, or the "third eye".

The soul acts and experiences through the body via this particular point and the connection between the physical and the non-physical is by the medium of thought.

The source of true happiness doesn't lie outside the self, but springs from a stable mind.

In meditation one can perceive the soul as an infinitesimal point of non-physical light surrounded by an oval shaped aura. The soul is not an invisible or etheric duplicate of the physical body. The soul-energy which manifests as thoughts, feelings etc, has no physical size. Something with no physical size cannot be destroyed.

When the soul is in the body it manifests as three faculties. Although each faculty can be given a different name, it is actually the same energy, the soul, functioning on three different levels — these are the MIND, the INTELLECT, and the SANS KARAS.

MIND — is the thinking faculty of the soul. It is through the mind one imagines, thinks and forms ideas. The thought process is the basis of all emotions, desires and sensations.

It is through this faculty that, in an instant, thoughts can be projected to a distant place, or past experiences and emotions can be relived. It is the mind that experiences emotions and moods. The mind is a subtle organ or faculty of the metaphysical soul, not to be confused with the heart or even the brain.

INTELLECT — is then used to assess thoughts. This is the faculty which understands. Our capacity to understand is perhaps the single most crucial ability of all. With the deepening and broadening of the intellect clear understanding and realization of knowledge becomes natural.

In addition to understanding, the intellect reasons, discriminates, judges and exercises will power.

SANSKARAS — a record of the soul's experiences and actions. (Sometimes referred to as 'impressions' or 'subconscious mind') Sanskaras can take the form of habits, emotional temperaments, personality traits, beliefs, instincts or values.

Every action as experience either creates a sanskar (this is how a habit begins) or re-inforces an old one. Whatever impression is etched in the soul, remains within the soul forming a complete record of all the experiences the soul has had.

Thoughts arise from the sanskaras. Sanskaras are the impressions of experience. Thought is the seed of action and experience. When there is the desire for pure experience, coupled with the realization for the role of thought, then naturally there is the desire to select out those seeds which will bear the desired fruit.

The desire may be for peace, knowledge, contentment, love, power, joy, insight — any one of a number of positive experiences may be savoured. And of course there will then be the aim to control or eradicate those thoughts which are the seeds of disharmony and peacelessness.

What is the mechanism by which the soul can select it's desired thoughts and emotions?

The commonly used expression "will power" refers to a person's ability to put into practice the ideals he knows to be for his well being, and to resist activity which is harmful.

In the case of the weak intellect, thoughts arise from the sanskaras not on the basis of intellectual choice, but according to the atmosphere or according to the moods of others.

A powerful soul enjoys the experience of its choice regardless of external stimuli.

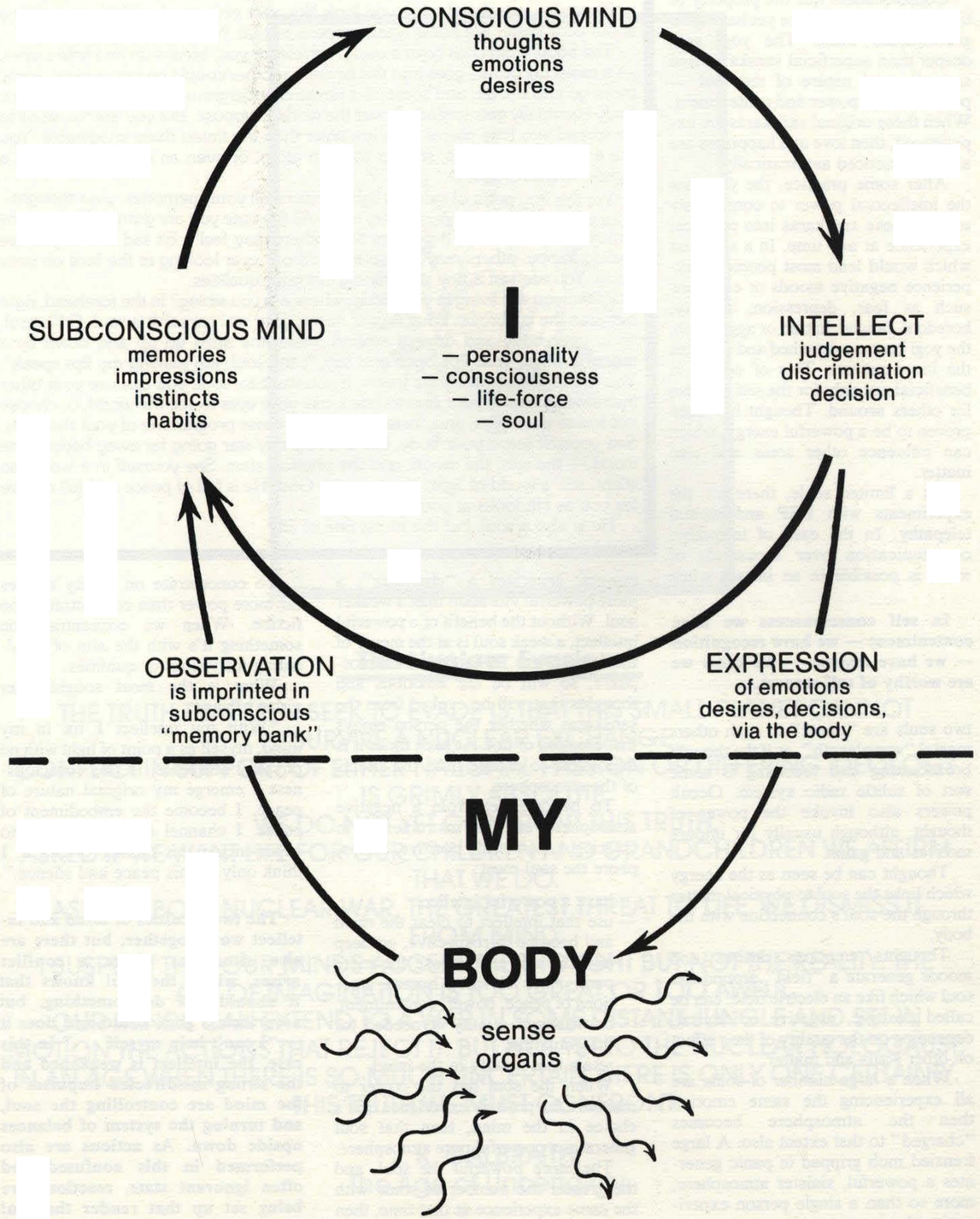
In the initial stages of meditation, the yogi calms the mind and experiences sanskaras which in most people surface only occasionally as they are deeper than the superficial memories of worldly experiences. These are the pure and powerful sanskaras relating to the eternal nature. As the soul is not a material energy, but is a weightless metaphysical energy separate from the body, then the dualities of matter

The functioning of the soul may be compared to that of an ordinary body cell, at least for purposes of simplified explanation. A cell is composed of three different functional units: the cell body, the cell membrane and the nucleus. Similarly, the soul may be understood to manifest in three distinct modes: mind, intellect and latencies (sanskaras or personality traits).

Applying this cellular schema to the soul's functioning, the mind may be compared to the cell body, which digests nutrient material and turns it into protoplasm bringing about growth. In the same way, the mind produces thoughts, which are the nutrient of the soul. If that thought is elevated and pure, the soul grows; if the thought is debased and vicious, the soul degenerates.

But just as the cell body's activity depends on the type of material which has been allowed in by the cell membrane, in the same way, the intellect acts as a screening and monitoring device, determining which sorts of influences from the environment should be heeded and which ignored; which books should be read, for example, which thoughts imbibed. The intellect chooses, in other words, how the soul is to grow.

Finally, the cell's nucleus determines its overall nature through its possession of the genetic material. Its nucleic acid molecules will govern not only its present structure, but also the future generations of cells produced through the cell division. In a like manner, the soul's latent tendencies, or sanskaras, determine how the individual functions and responds to its environment. Of course, the sanskaras are malleable, and the intellect, by causing the mind to produce pure thoughts, can change the 'genetic code' of the sanskaras, making it immune, for instance to the negative pressures of an unhealthy environment.



don't relate to the deep inner nature of the soul.

Consciousness has the property of light — a powerful force yet having no gravitational mass. The yogi sees deeper than superficial sanskaras and sees the real nature of the soul — peace, purity, power and contentment. When these original sanskaras are experienced, then love and happiness are also experienced automatically.

After some practice, the yogi has the intellectual power to consciously emerge these sanskaras into practical experience at any time. In a situation which would lead most people to experience negative moods or emotions such as fear, depression, anxiety, boredom, fatigue, hatred or aggression, the yogi become detached and emerges the inner powers. This of course is beneficial not only for the self but also for others around. Thought has been proven to be a powerful energy, which can influence other souls and also matter.

On a limited scale, there are the experiments with ESP and mental telepathy. In the case of telepathy, communication over thousands of miles is possible in an instant when

In self consciousness we have contentment — we have recognition — we have respect — we know we are worthy of self respect.

two souls are "tuned" to each others mental "wavelength", as if the thought broadcasting and receiving is some sort of subtle radio system. Occult powers also invoke the power of thought, although usually for impure motives and gains.

Thought can be seen as the energy which links the soul to physical matter through the soul's connection with the body.

Thoughts, emotions, desires, and moods generate a "field" around the soul which like an electric field, can be called positive, negative or neutral, depending on the quality of their effect on other souls and matter.

When a large number of souls are all experiencing the same emotion then the atmosphere becomes "charged" to that extent also. A large frenzied mob gripped in panic generates a powerful, sinister atmosphere, more so than a single person experiencing the same emotions.

Similarly, a soul with great mental powers, generates a "charisma", a more powerful vibration than a weaker soul. Without the benefit of a powerful intellect, a weak soul is at the mercy of the atmosphere. Whatever the atmosphere, so will be the emotions and thoughts that will be evoked from the sanskaras whether the person enjoys that emotion or not. At such times it is impossible to escape from the effects of the atmosphere.

To be detached from a negative atmosphere and be instrumental in creating a powerful, positive atmosphere the soul must:

— have a powerful intellect
— use that intellect to clear the mind and become introspective, go deep into the self and choose the more pure, more elevated human emotions of peace, power, contentment, or whatever quality is needed for that situation.
— retain that quality in the mind.

When the soul has the power to maintain the positive experience of it's choice in the mind, then that soul generates a powerful pure atmosphere.

The more powerful the soul, and the greater the number of souls with the same experience at that time, then correspondingly the atmosphere is more powerful.

To concentrate on reality creates far more power than concentrating on fiction. When we concentrate on something it's with the aim of inculcating it's virtues or qualities.

What is the most sought after virtue? Peace.

"With my intellect I fix in my mind, myself as a point of light with no physical attributes. In this consciousness I emerge my original nature of peace. I become the embodiment of peace. I channel all my thoughts to experiencing this quality of peace. I think only of this peace and silence."

The two faculties of mind and intellect work together, but there are also situations where a conflict arises, where the soul knows that it should not do something, but nevertheless goes ahead and does it — "I can't help myself . . ." In this case, the intellect is weakened and the strong misdirected impulses of the mind are controlling the soul, and turning the system of balances upside down. As actions are also performed in this confused and often ignorant state, reactions are being set up that render the soul even weaker.

LOOK AT ME!

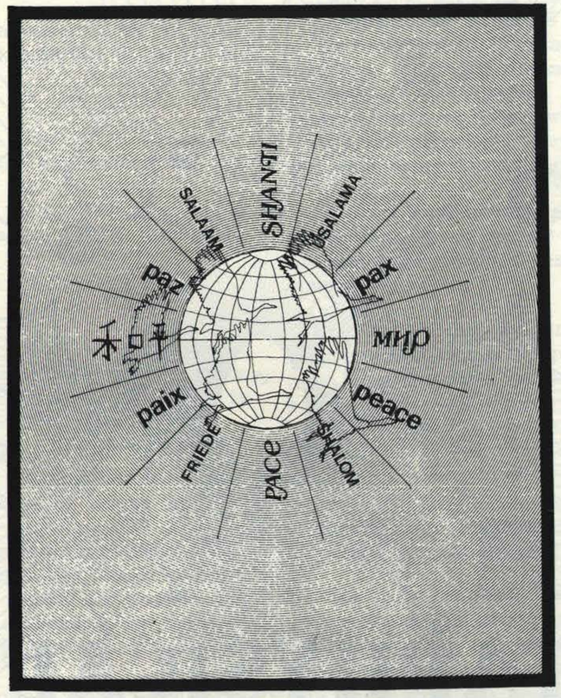
Have you wondered what you look like after you are dead? I'm not talking about your body. We know what happens to that. No. I'm talking about you.

The body, which has been a useful vehicle for you, breaks up into little pieces, — a molecule or two goes into this or that, another couple go into a plant, some more go into the air, and some of it remains underground for a long time. Your body eventually gets spread all over the world I suppose. But you are too small to be spread into little pieces. You are tinier than the tiniest thing imaginable. You are a tiny point of light, smaller than an atom, or even an electron, or even a quark, whatever that is.

Yet this tiny point of spiritual light contains all your memories, your thoughts, your judgements, your personality traits. All the time you are giving off vibrations which others can feel. If you are sad, others may feel a bit sad too. If you are feeling happy, others may feel so too, without ever looking at the face on your body. You are just a tiny star shining out your qualities.

When you are living in your body, where are you sitting? In the forehead, right between the eyebrows. What is your name, your real name? It is soul. O.K., soul, sit in your body and drive it around. Make the arms go up and down by a thought. Make your lips open and say, "I the soul, am making my lips speak". You are in control of all the levers. If you want to, soul, you can use your other instruments — use your ears to listen, use your eyes to see the world, or choose not to use your eyes, and, instead, watch a movie programme of your thoughts. See yourself leave your body, like a lovely tiny star going far away beyond the world — the sun, the moon, and the physical stars. See yourself in a world, so silent, still, a world of light. You are with God. He is full of peace and full of love for you as He looks at you, the soul.

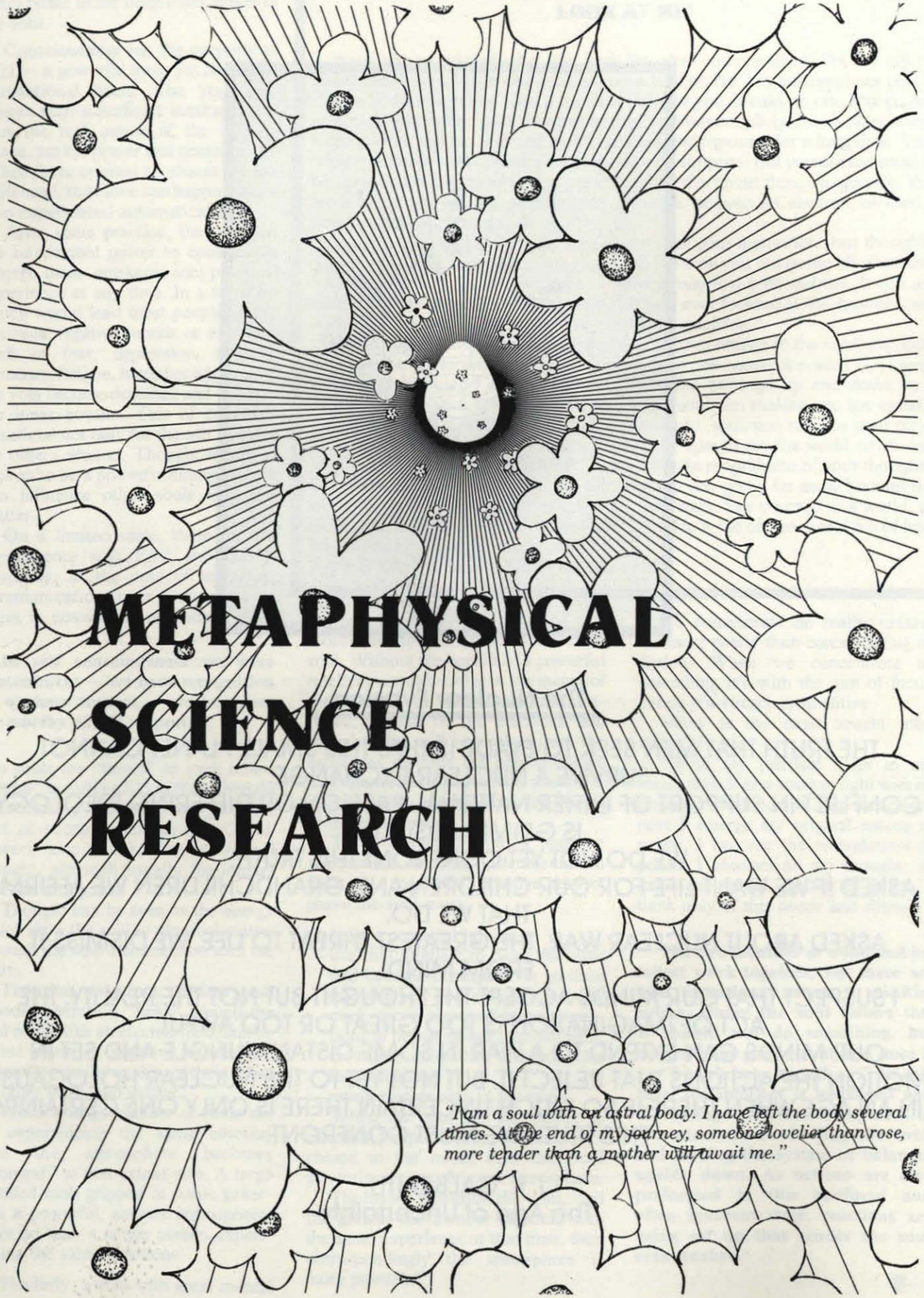
He is also a soul, but the nicest one of all.



The Nuclear Evasion

THE TRUTH THAT MEN SEEK TO EVADE IS THAT THIS SMALL PLANET CANNOT SURVIVE A NUCLEAR EXCHANGE.
CONFLICT IN SUPPORT OF EITHER NATIONAL PASSION OR DIFFERING IDEOLOGY IS GRIMLY ABSOLUTE.
WE DO NOT YET CONFRONT THIS TRUTH.
ASKED IF WE WANT LIFE FOR OUR CHILDREN AND GRANDCHILDREN WE AFFIRM THAT WE DO.
ASKED ABOUT NUCLEAR WAR, THE GREATEST THREAT TO LIFE, WE DISMISS IT FROM MIND.
I SUSPECT THAT OUR MINDS ACCEPT THE THOUGHT BUT NOT THE REALITY. THE ACT OF IMAGINATION IS TOO GREAT OR TOO AWFUL.
OUR MINDS CAN EXTEND TO A WAR IN SOME DISTANT JUNGLE AND SET IN MOTION THE ACTIONS THAT REJECT IT. BUT NOT YET TO THE NUCLEAR HOLOCAUST.
IN AN AGE WHEN THERE IS SO MUCH UNCERTAIN THERE IS ONLY ONE CERTAINTY.
THIS TRUTH WE MUST CONFRONT.

J. K. GALBRAITH,
The Age of Uncertainty



METAPHYSICAL SCIENCE RESEARCH

"I am a soul with an astral body. I have left the body several times. At the end of my journey, someone lovelier than rose, more tender than a mother will await me."

Excerpts from a lecture given by Dr Hansa Ravel.

There is now a mass of documents research into metaphysical phenomena. In brief here are some of the findings:

Dr Kubler Ross concluded, after examining people who had death experiences, the soul selects its own destination after death.

The soul is not an ordinary thing. When the soul is outside the body it thinks judges clearly, has sharp intellect and memory.

The soul communicates with the Supreme Soul.

"I am not the body, I am a soul — non physical, and of no sex. The body is the thing I used on earth. All souls were globes of light. It was so beautiful to be free from the bondages of the earth."

Helen Wambach hypnotised 2,000 people at random. She asked, "Why did you select to be born in the 20th century?"

93% said they wanted to be born at the end of the 20th century because, they said, this is the time of spiritual awakening; a learning time, a time of monumental changes — social, political and economical, the end of an era and the birth of a Golden Age where there is oneness and unity in the universe.

In 750 cases she let them experience dying. 100% said death was a pleasant experience.

She asked "Why did you come to earth again?" They said it was the pull of karma; "God didn't force me to take birth, it was to clear the karmic account."

Ms Wambach asked about foetal life. 99.9% said it was like being in prison — sad and painful. It was frightening to be born again.

When in the bodiless state the soul was free and had no desire for wealth or power.

Souls are trapped in a flesh prison. Alien matter of the material world hopelessly entangles the corrupted soul. Man has evolved into an anguished hybrid — half man and half animal.

Dr Raymond Moody studied 6,000 cases of which 2,000 were documented. His subjects had been dead for 30 minutes. He studied children who didn't have knowledge of what was written in books and people of various religions.

He was a staunch Catholic and didn't believe in reincarnation. Through his experiments he realized there was evidence to support reincarnation.

He found when the soul leaves the body it meets light. The light was bright, warm, radiating peace and love.

Everyone saw light. The soul was happy flying like a bird — liberated and free. No-one wanted to come back.

When they were brought back to life they were angry with the physicians, their relatives and their karma. They had tasted liberation and soul consciousness.

They said not only was there light but also the light was giving knowledge of the universe and eternity. In a few minutes they had tremendous understanding and experienced spiritual guidance.

They felt no suffering when they left the body. No-one said that God had punished them.

They were asked after they came back into the body what their experience was now. All of them had lost the knowledge. Only glimpses remained. They wanted to leave to search for the knowledge and light.

After this experience, they had a great change in their life. Many became vegetarian and spiritual.

"I felt I had come home to rest. There was the consciousness of purity and peace. There were thousands of levels. I reached a level where I felt comfortable."

Brad Steiger has written about 20 books and is a leading researcher into the psyche. He collected 100,000 cases from computer research and concluded that the way we communicate in the world is wrong.

He said telepathy was the way we communicated in the past and although these powers of telepathy are rare now, they will become a common power again.

He said, "through meditation one may enter silence and explore the inner realms. one discovers the key to awareness and happiness."

"We face a season of cataclysmic changes. An agonizing death of the old world will take place. From the ashes wil emerge a new world . . . the golden age of mankind. We are dawning into a new age where spiritual law will apply. To incarnate into the new world you have to make the soul ready, sublimate the ego, gain knowledge, love and wisdom. You must vibrate high spiritual energy for all, then only will you be able to go into that new age. All this involves effort."

Frederick Lenze described the world of souls as being of beautiful colours. "There were thousands of levels and sub levels."

"The higher levels were brighter than the lower levels. The soul rests at its own level and stage."

He said that new souls had fewer lives and rested in the lower levels. Old souls had more lives and rested in higher levels. These higher level souls helped the lower level souls.

Edgar Cayce said there is no fortune, everything depends on karma. He said the soul is immortal, an entity that selects its own destiny. He stated the physical consciousness dies with the body. Super consciousness belongs to the spirit world.

There was evidence in the Bible of reincarnation. Theodora the wife of Emperor Justinian condemned the references to reincarnation in the Platonical writings of the Chalcedonian decree. Consequently the book was buried.

In the 14th century the book was found and sold as an antique. It is now in a British library.

Scientists are endeavouring to delve deeper into the realm of metaphysics. What has been outlined in this synopsis is but an atom of what they expect to understand in the near future.

VIOLENCE!

Johanne Hodge , Canberra ,Australia.

We have developed the capacity to live with violence of all descriptions. Every day we watch living death and destruction on newsreels and read about it in newspapers and our children watch hours of violent action on T.V.

"It has been said that the destruction of the environment is a symbol of the cruelty and brutality that characterizes human society".

We teach these young people in schools about the ecological mismanagement of the earth and how difficult it is for people to live in harmony with nature and their fellow man.

THE HISTORY OF VIOLENCE

There are two main approaches to the history of violence, the religious approach and the scientific.

Basic to the religious view is the idea that man was once completely non-violent and lived in harmony with a perfect environment, but then fell from this idyllic state to where he is today, totally degraded in thought and action.

The scientific view is based on the belief that man is inherently violent, as are other animals, through the long and rigorous process of evolution through natural selection.

The religious or mythological basis of violence. According to the ancient mythology of almost all nations, there occurred a "golden era' of peace and brotherly love. A time which poets and prophets yearn to restore, where there was an ideal social order with no possibility of violent conflict.

According to Hebrew and Roman mythology the first acts of violence were fractricides; Cain slew his brother Abel and Romulus killed his brother Remus. Cain was driven by envy and Romulus by his desire to protect his rule and power.

According to the Old Testament, Adam and Eve along with the beasts were vegetarian. Their diet was limited to 'every herb bearing seed . . . and every tree in which is the fruit of a tree yielding seed'.

They were expelled from Paradise because they were no longer worthy of the title of immortal beings. They had become mere mortals with vices and impure desires.

Now in contrast not only the 'green herb' but *all* living things were handed over to Adam and his descendants as their food. After the fall he had no choice but to play the tyrant, not only over animals but over plants and the soil.

A paradisial garden no more 'thorns also and thistles shall it bring forth to thee'. Thus the mere task of providing food was converted into unremitting toil.

Thus it is said that ecological damage developed long before the establishment of the major religions.

Evolution and Aggression. In contrast, Darwin presented a view which shocked the traditional views of the church.

According to his theory, aggression is based on adaptation and is essential in population dispersion, sexual rivalry and social organisation. Emphasis is placed on the aggressiveness of males and their size and strength.

Thus in primitive society they were equipped with weapons and decorations for the purpose of intra-sexual competition over females.

The adaptiveness of male aggression can also follow from other male roles such as protecting his female and offspring or defending scarse resources for them.

Little is said about female aggression, however it is clear today that females are just as capable of violence as males.

Adaptation is based on the struggle for survival, a struggle made necessary by a physically changing environment. Thus the process of genetic mutation is believed to lead to alterations in behaviour or physical structure that become necessary for survival.

We might conclude that evolution tended to favour the best hunters and killers and the prevalence of violence today is left over from the time in history when it had a positive function in the life of the species.

Has man become a civilized species of animal who still carries with him the heritage of a violent past, or have we in fact degraded from a once peaceful and harmonious existence?

THEORIES OF MARX & FREUD

It is a commonly held view, due in part to the theory of Darwin, that aggression is an innate characteristic of man.

This view is apparent in the theories of Marx and Freud and can therefore be said to be the underlying factor behind man's inability to modify or to change. his behaviour in a more positive direction.

Freud concluded that man possesses an aggressive drive from within, and furthermore it can be seen as an externalization of the death instinct. This is based on the theory of life and death instincts.

The dominant idea guiding psychological research has been that frustration leads to aggression. Frustration refers to the blocking of an individual's pursuit of some goal.

Aggressive behaviour is likely to occur for example if a child wants something and cannot have it.

Marx takes a wider view of aggression and links it to economic determinism. He refers to violence as social deviance as a response to poverty.

Poverty is characterized by those economically exploited by the private owners of property and the means of production. It has been shown that aggression is in fact socially reinforced particularly in societies which attach prestige to it. Thus it can actually increase where it is socially rewarded and then be perpetuated by individuals, groups and organisations. It is interesting that Maxism in the world has always been associated with revolution and violence, even after the establishment of a new socialist state, where the effects of poverty have been overcome.

These theories do provide a basis from which to look further at human violence but they too are limited by the world view of the men that formulated them. Very few people for example, would have the opportunity or the desires to be pyscho-analysed in Freudian terms, nor do we appear to be developing a society based on Marxian ideals of economic and social equality. It could be argued that awareness of the problems of social inequality has developed over the last century. But is this awareness linked to a reduction of violence in our society or an improvement in the quality of our environment? Not so at all. Violence seems to be deeply ingrained in our way of life from early childhood onwards.

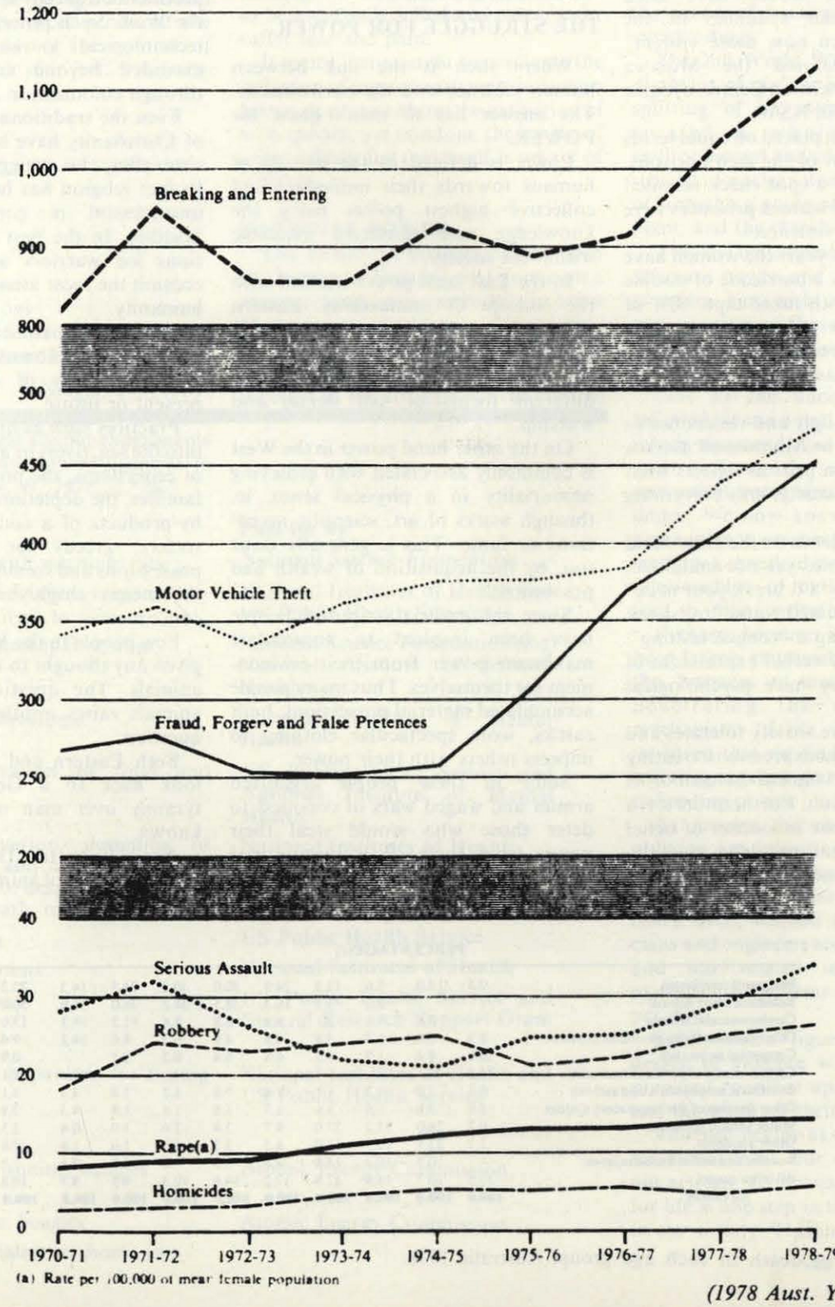
HOW DO WE TREAT EACH OTHER AND OUR ENVIRONMENT?

Figure 1. shows how the incidence of violent offences has increased over the past ten years. Many other offences go unreported, particularly those related to family violence and child abuse.

What is the reaction to such behaviour. One need only look at the local papers to see how violence is dramatized to sell more copies.

People buy and enjoy stories of rape, murder and theft. Violence also sells films and television shows.

OFFENCES REPORTED OR BECOMING KNOWN TO POLICE: AUSTRALIA, RATES PER 100,000 OF MEAN POPULATION



(a) Rate per 100,000 of mean female population

(1978 Aust. Year Book)

Jung, a neo-Freudian psychologist, hypothesised that a person with extrovert tendencies will 'act out' his aggression against others and the environment whereas the violently aggressive introvert will be self destructive and suicidal. (See Fig. 2).

According to death figures in Australia, 1.5% of the population die from suicide or self-inflicted injuries.

Even Darwin would have been surprised to read headlines in the Bulletin, 'Women now more violent'. The article featured the Mulawa Training and Detention Centre, a major women's prison in NSW.

It has now been placed on equal terms with the toughest of the men's prisons. Earlier this year a spot check revealed that 37 of the 105 women prisoners were in for crimes of violence.

In the past few years the women have been enclosed by a barricade of double fences topped with razor tape. 60% of the women are in on drug related crimes in which they were active in armed hold-ups, grievous assaults, break-and-enters and burglaries.

Prison can be ugly and violent but as psychologist, Irene Mamontoff asserts, 'What happens in prisons reflects what is happening in society, only everything is magnified'.

Figurative violence on the other hand is more intangible, yet not inaudible. We say smilingly "I'll break your neck" or "I'll punch you in the nose", or speak of someone giving a "tongue lashing". These are merely verbal expressions of violence but they have psychological implications.

Certainly where society tolerates and propogates violent expressions, treating it as normality, violent behaviour is more likely to result. Furthermore it is a reflection upon the innocence of belief today to say that only the mentally unstable, psychopathic person is capable of killing.

This idea ignores the aspects of what is normal in a violent age. In trial after trial of men who committed mass murder during the Nazi regime, it has now been ascertained that the perpetrators were educated, respected citizens who lived typical ordinary lives with their wives and children.

Few people today will admit to their own violence but will quickly shun others who are violent.

THE STRUGGLE FOR POWER

Where then is the link between human violence and the environment. The answer lies in man's quest for POWER.

Power is defined as the striving of humans towards their individual and collective highest points using the knowledge and resources available within the society.

In the East such power is allied with the concept of immortality. Eastern religion is mostly man-centred in that it is concerned with the single minded aim of achieving 'enlightenment' through different forms of self denial and worship.

On the other hand power in the West is commonly associated with achieving immortality in a physical sense, ie. through works of art, scientific inventions or fame. This is generally done too, by the acquisition of wealth and possessions.

Since the earliest scriptures people have been inspired to accumulate maximum power from their environment for themselves. Thus many people accumulated material possessions, built castles, wore spectacular clothing to impress others with their power.

Some of these people organized armies and waged wars of conquest to deter those who would steal their power from them. It is known that insecure people try to dominate others, often through violent means.

One of the effects of the need for power is the fact that weapons are becoming more freely available throughout the world. Inevitably these weapons flow into the hands of self-proclaimed freedom fighters, terrorists, fanatics and alas, the children born into a world of arms. To them automatic machine guns are just a toy.

Capitalism, it can be said, is the end product of a greedy search for power in the West. Such power, with the aid of technological knowledge, has been extended beyond our own society through colonization and war.

Even the traditional moral teachings of Christianity have been ineffective in controlling this struggle for supremacy. In fact religion has been spectacularly unsuccessful in controlling human hostility. In the past religious convictions led warriors and crusaders to commit the most atrocious acts against humanity.

Morals today are seen in terms of law, politics and economics. Little thought is given to injury of our fellow men, present or future.

Practices such as disposing of wastes into the sea, rivers or air, the destruction of ecosystems, the procreation of large families, the depletion of resources, are by-products of a consumer orientated society, greedy for ever increasing possessions and seemingly indifferent to the means employed and the wider consequences of such actions.

Few people in the West for example, given any thought to our relations with animals. The question of cruelty to animals raises another serious moral question.

Both Eastern and Western cultures look back to a Golden age where tyranny over man or beast was not known.

According to the philosopher, Singer, the use of animals in experimentation and for food today is one was we participate in a systematic form of oppression of other species by our own.

There is a major world industry today devoted to performing experiments on animals that inflict severe paid without the remotest prospects of significant benefits for humans or other animals. (See Fig. 3).

A 1971 survey carried out by Rutgers University College of Agriculture and Environmental Sciences produced the following estimates of the number of animals used each year in U.S. laboratories.

85,000 Primates
500,000 Dogs
200,000 Cats
700,000 Rabbits
46,000 Pigs
23,000 Sheep
1.7 million Birds
45 million Rodents
15-20 million Frogs
200,000 Turtles, Snakes and Lizards
A total of more than *63 million* animals!

(Singer, P., 1976)

Fig 3. List of some animal experiments performed by government agencies in America. *(Singer, P., 1976, p.71).*

Experiment	Paid for by
Electric shock, with warning; rats	National Science Foundation
Electric shock, delayed response required; dogs	National Institutes of Health and US Public Health Services
Electric shock, inescapable; dogs	National Science Foundation and National Institute of Mental Health
Electric shock; ducklings	National Institute of Mental Health
Terminal deprivation of food and water; rats	US Public Health Service and National Institute of Mental Health
Maternal deprivation, designing of "well of despair" and "tunnel of terror", isolation in well of despair, inducing of psychological death; monkeys.	National Institutes of Health
Heatstroke; dogs	US Public Health Service
Malnutrition; kittens	National Institutes of Health
Pain in testes; cats	US Public Health Service and General Research Support Grant
Development of apparatus for testing cats	National Institutes of Health and US Public Health Service
Strontium-90 poisoning; beagles	Atomic Energy Commission
X-ray irradiation; beagles	Atomic Energy Commission
Variable current electric shock; rats	

For most people in the West, the most direct form of contact with non human animals is at meal times when they eat them. This simple act is one of the keys to our attitudes of sheer exploitation and greed even in the food we eat. Apart from the inevitable suffering which occurs, in energy terms it is not a practical way of poducing protein.

Battery chickens are commonly sited as examples of the factory approach to farming, but any animal which is raised to be eventually killed and eaten, must suffer fear and pain.

It seems inconsistent to condemn the infliction of unnecessary pain on human beings or protest about the extinction of wild species, yet condone the eating of animal flesh, for that itself is an act of violence.

NATIONAL POWER

The history of civilization has been the history of expansion of power on a national level, seen commonly in times of war.

From the 16th to the 19th century this power brought science and the state together in the struggle for the control of goods, monopolies and trading power. Technological skills, such as light, strong metals for cannons, developed from these times.

The 20th century global wars have added to technological discoveries and further research. All these discoveries proved crucial in the development of mass-produced consumer durables such as the car, tractor and aeroplane. These inventions hastened the destruction of the environment by directly increasing the power of humans to modify their surroundings.

The 2nd World War ushered in the discovery of nuclear power through the splitting of an atom. This in itself created a whole new set of environmental and social problems; the storing of nuclear waste, the possibility of something going wrong in a nuclear plant, and the threat of nuclear war.

This last development both gives man ultimate power and at the same time provides him with a completely new appreciation of the unity, interdependence and precariousness of the human condition.

Just as the ancient philosophers believed we are a part of a greater unity which transcends our individual drives and desires, the modern ecology movement recognises this interdependence. We now know that aggression and violence on every level ultimately lead to a break down in the delicate relationships of existence and could lead to ultimate death and destruction.

Perhaps because Western man has been largely responsible for opening up the furnaces of nuclear power and penetrating the most intricate mechanisms of life, it is the Western tradition that we find the most urgent warnings against greed, arrogance and unheeding power.

At present the chances of nuclear oblivion are exceedingly high. CUrrent nuclear weapon stockpiles have the capacity to kill everyone in the world 24 times over. 400,000 scientists, technicians and engineers are employed in war and war related industries. World expenditure on arms is $1,000 million per day.

Surely these figures attest to the degree of violence which humans are prepared to inflict upon other humans and therefore on their environment.

Violence begins at the fundamental, individual level; our own thoughts or our actions. To develop a new reverence for life is one step in the change needed in our society. This involves the ability

see page 47

PERCENTAGE(c)

Malignant neoplasms	0.4	13.0	5.6	15.3	24.9	30.0	30.2	24.5	14.3	20.2
Ischaemic heart disease	-	-	0.3	3.7	16.3	28.5	34.2	36.0	31.9	30.0
Cerebrovascular disease	-	0.8	1.1	3.1	6.4	6.8	8.4	12.2	19.3	13.0
Other diseases of the circulatory system	0.3	2.0	1.7	3.9	4.8	4.9	6.2	8.0	14.2	9.4
Congenital anomalies	26.0	9.4	1.7	1.1	0.8	0.4	0.2	0.1	-	0.9
Certain causes of perinatal mortality	43.4	0.1	-	-	-	-	-	-	-	1.1
Bronchitis, emphysema and asthma	0.1	2.0	1.2	1.1	1.4	2.6	4.2	5.4	4.4	4.1
Other diseases of the respiratory system	3.8	3.6	1.0	1.1	1.7	1.6	1.5	1.8	4.3	2.8
Motor vehicle accidents	0.7	26.0	53.2	27.0	9.7	3.9	2.0	1.0	0.4	3.5
Other accidents	1.7	22.1	12.3	11.0	8.3	3.2	1.5	1.0	1.8	2.6
Suicides and self-inflicted injuries	-	0.5	10.4	14.8	8.5	3.5	1.3	0.5	0.1	1.5
All other causes	23.5	20.7	11.4	17.9	17.2	14.6	10.3	9.5	9.1	10.8
All causes	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Fig. 2. Causes of death in each age group, Australia 1978. *(1978 Year Book)*

The question the whole world is asking is "when will there be nuclear war?" And the resounding answer is silence. For who can answer such a deadly question.

The psychological effect of living under the threat of annihilation manifests in a certain mode of thinking. How often have we heard political leaders say, "total annihilation isn't necessary. We can fight a limited nuclear war. The human race will not be wiped out."

Yet look at the statistics — U.S.S.R. has 300 SS-20 missiles in place and capable of being targeted on Western Europe. NATO has begun deploying 572 new Perishing II and cruise missiles in Europe. The U.S. has 9,480 strategic warheads aimed at preselected targets inside the U.S.S.R.

The chances of limited nuclear war are slight. So how do we live in a world shadowed by death?

Many would say we should prepare ourselves by stockpiling weapons and training for war.

The people who survive World War III will be those who have filled themselves with spiritual powers of peace, love, purity and contentment. These souls will have only good wishes for others in their minds. Collectively they will present an invincible pillar of strength, capable of overcoming even the horrors of nuclear war.

Through their spirituality they will be like a light in the dark guiding people who have lost direction in their lives, and have become apathetic and inured to the idea of death.

Interview

Survival

World unity — is it so difficult to strive for? In 1980 India hosted the World Conference on Human Survival, a conference designed to raise world problems and offer a solution to them. Various heads of states attended among them Steve Narayan, now the Vice-President of Guyana. During an interview he discussed how this world unity could emerge . . .

Mr Narayan, do you think a perfect system of government is possible?

As we look at the world today, most people would answer that question in the negative because there is so much division in the world. Even in one nation there can be many divisions. As a matter of fact, most parties in office or governments in office would say that there is always opposition, even within the one party's state. There is also opposition within the ruling party. However, this world cannot continue this way indefinitely, without something very serious happening, because all over the world there is this kind of division; there is hostility and civil wars. The world right now seems to be on the border of another World War.

So, I believe there can be a single government. But for such a government one would need to have political and religious unity. Many people, religious people, believe that there will be an end to this old vicious world and a new world will be created. The difficulty with this is, when?

As the world appears now, that "when" seems to be getting nearer and nearer. Obviously, if something very catastrophic, for example, out and out Nuclear Warfare or natural calamities, occurs in the world, then the world will virtually be destroyed and humanity will be removed almost completely.

Now, what is left of humanity having gone through that experience of almost total destruction? The fear would bring people together, they would start thinking together, thinking alike, living in harmony and unity and a new breed of people would be created.

This is what you have written in stories and books on Utopia. It is my belief that it is possible. It is my belief that it will come again. And as things are going, it may come sooner than we would expect.

Planets

Planets Line - up

March 1982 — the month the world held it's breath in anticipation of calamities and devastation.

It was during this month all nine planets clustered on one side of the sun. According to many people, the outcome could range from altering the earth's rotation to slight changes in the weather.

In Sydney a four hour symposium was held by Spiritual Awareness Guidance Education (S.A.G.E.) to discuss the effects of the planet's alignment. Representatives from the Salvation Army, astronomy, astrology, and spiritual groups presented their ideas on what could happen and how to prepare for any outcome.

The most startling information came from an audiovisual feature. Ideas were outlined on how the earth shifted it's axis to it's present angle, the great flood, pyramids, and other ancient mystical events.

Guest speakers elaborated further the concepts of the audio-visual feature. They agreed man would experience the effects of the planet line-up in more subtle forms than major events.

Book Review

MEDITATIONS AND JEWELS OF KNOWLEDGE

A delightful answer for those suffering from mental suffocation: a series of thoughts which ease the mind into solitude and peace. "Meditations and Jewels of Knowledge" contains up to 40 exercises to increase the powers of the mind. Topics include: discovery of the soul, returning to the region of souls, God, developing divine virtues and instruction in the 8 major powers of a yogi.

The book aims to give its reader a positive direction in life through changing attitudes of the mind from what can often be destructive, to helpful.

"Meditations and Jewels of Knowledge" was designed to fit into pockets and handbags so the reader can carry it where he goes thus always having it handy for those times when he needs a dose of stability, strength and peace.

Meditation and Jewels of Knowledge can be purchased from the addresses listed in the back of this magazine.

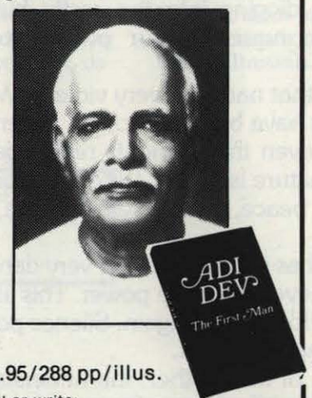
The souls of the whole world are near you, in your forehead. Even if someone is very far away, within a second, on the basis of your good feelings, you can give rays of peace and power to that soul.

The vision of the jeweller constantly falls on the diamond. All of you are also jewellers, your vision should not be drawn by stones. Only see the diamonds.

During the whole day you should be bathing in the waves of the ocean of pure thoughts and whenever you wish, dive deep into this ocean and become an embodiment of silence; which means you must have a powerful brake. Your thought power should be under y our control and along with it even the intellect and sanskaras, the other two special powers of the soul. All three of them should be under your control.

ADI DEV - a life story to transform your life!

You will not be able to read this vibrant account of the extraordinary transformation of a simple human being into ...
ADI DEV - The First Man, without being transformed yourself!



$6.95/288 pp/illus.

Call or write:
BK World Spiritual University
1619 Clement Street
San Francisco, CA 94121
(415)668-3487

UNITED NATIONS

NGO/DPI

Hope for Mankind

Brahma Kumari Janki's presentation to the Annual Conference of the Department of Public Information of Non-Government Organizations — Energy: Development and Survival.

Om Shanti. Dearest brothers and sisters, greetings of love and peace, in the remembrance of our Supreme Father.

I have come today with a message in words and beyond words; a message not about what we lack, but about what we have; a message about a resource we have all forgotten.

If a rich man forgets that he has money, or does not believe it, then he is a poor man indeed.

We are worried about a loss of energy. There are many kinds of energy — coal, oil, atomic power, the sun, wind, the water. But none of these can be used safely or successfully until we harness another kind of energy first.

We have studied the properties of matter for a long time. But now we must go beyond the elements of matter, beyond our bodies which are made of matter. The energy we need today will not be found by digging into the earth, but by going beyond, conquering our own material natures.

Today, we see that nature is very violent. Why? Because we souls have become violent. When we go out of order, even the elements rebel against us. But our real nature is peace. When we spread the vibrations of peace, nature will become our servant.

Science power has made the world very dangerous. It is time to develop silence power. This alone can make the world peaceful again. Silence power gives us three great treasures.

First, the vision of the brother: the understanding that behind the differences of race and nation and religion, all souls are the children of One Father. We are a family.

Second, there comes a desire to share what we have. Why does the world seem poor today? It is said, there is enough for man's need, but not for man's greed. But where are the programs to wipe out greed?

All of us recognize the vices in others — whether it be anger or lust or arrogance. But who is willing to conquer these vices in himself?

Unless this happens, can any form of energy bring relief to humanity? The world is deceived if it thinks so.

We need to plan for the future — that is why we are here. But the future means change. It will not be like the present. In the winter, we must foresee the spring. Many factors together will shape the future, not just energy.

So much of our energy is locked up in preparation for war.

So much of our energy is locked up in preparation for war. But what kind of world is forming now beyond all that?

We must look ahead with a cool mind. The vision of the future is the third treasure from the mines of Silence. One sees a world where all things are given freely, where all the highest human powers are fully realized.

Today we have the UNITED NATIONS; then there shall be the UNITED NATURES. But we can get to that stage only when there are leaders to take us there. In this gathering, there are such leaders.

If you create that pure energy in yourselves, then the world will follow you. However you understand God — as peace, as love, as harmony — simply make those qualities your own.

This is the time. This is the choice. Here is the energy. What will you do? The world has been a jungle long enough. Now let us make it into a garden.

Om Shanti.

Non-Government Organisations

CONFERENCES 1982

Preparations are underway for the second special session of the Assembly on disarmament to be held in New York from 7 June to 9 July. The committee has been asked to report to the Assembly on the state of negotiations on various disarmament issues.

The second United Nations Conference on the Exploration and Uses of Outer Space (UNISPACE — 82) will be held in August this year.

The conference will use as its visual theme a poster designed by the world winner of a competition sponsored by the United Nations to publicize the conference.

Australia has decided on its winning poster for the competition. It's a striking design of upward-soaring birds, in United Nations blue and white, superimposed on a globe of primitive earth colours. The artist is Tony Ward of Wayville, South Australia.

Final judging for the poster will be in New York during March.

UNISPACE will concentrate on three main areas:

— the state of space science and tech nology
— applications of space science and technology
— international co-operation and the role of the U.N.

The World Assembly on Aging will begin on July 26th. The assembly is expected to adopt an international plan of action on aging to cover:

— the problems of the aging as a whole and such specific aspects as the rights of the aging
— their role in the community and family
— housing and environmental conditions and social, economic, and personal security for the aging
— the relationship between the aging of populations and economic development.

The General Assembly noted that the number of older people in the world will increase dramatically over the next decade.

It stated "the aging are a valuable resource as much in the economic and social fields as in the transmission of cultural heritage."

The General Assembly has pro claimed 1982 as International Year of Mobilization for Sanctions against South Africa and has called on all Governments, intergovernmental and non-governmental organizations and institutions to participate effectively in the observance of the year in co-operation with the United Nations.

An International Conference of Trade Unions on Sanctions against South Africa is scheduled to be held in May in Brussels.

It is not even the time now to caution one another with the mind, nor with words, but now it is the moment to give cooperation of pure wishes and good thoughts with the mind.

When you have your connection with the Father and you put on the switch of good feelings, immediately you will experience the souls who are in far away distances to be very close to you. This is called world benefaction.

A MESSAGE FROM GOD

"It is said that in the future Golden Age, ruling power and control of religious affairs are both exercised by the same authority.

But your attainment of these powers in the future depends on your present life. Sanskaras for the future are to be developed now.

Those who in the present are rulers of the self, will have the right to rule in the future.

And those souls who follow the elevated, divine code of conduct now, will be able to control religious affairs in the future.

The sign of someone possessing ruling power is that such a person can exercise the physical and subtle powers* as and when they are needed.

Such a person would be fully accomplished in all spiritual treasures and accomplishments and would also be able to inspire others to be the same.

Have you achieved such ruling authority?

Do you sustain other souls with such love, as if you are their mother and father? With proper sustenance others will see how to improve their lives.

With spiritual guidance, a small child or a weak soul can gain the confidence to aim for the highest goal.

When you give such sustenance, you experience immense, unbounded true love flowing from God, the Ocean of Love.

Do you see in yourself such signs of ruling power?

Do you feel that your sanskaras † of dependence are changing to sanskaras of divine rights?

These signs should be found here and now, not in the future.

And one more sign of ruling power — it should be unshakeable and unbreakable. So these signs should be constant; not strong one moment and weak the next.

From these signs you can see your future — whether you may be a ruler or not.

There are also the signs of religious power.

With this power, you would be able to inculcate all the spiritual attributes.

Take the special example of the Power of Purity.

This impure world is now being transformed through the Power of Purity.

This power cools down the temper of souls burning in the fire of vices, and brings them relief from their many burdens.

Purity bestows the Eye of Wisdom upon those who are spiritually blind, and transforms the self and others.

The Power of Purity has acted like a pillar which has supported the world to some extent since the advent of the Copper Age ‡.

Purity is the Crown of Light shown with all the Religious Founders. Whenever souls with such religious power have incarnated, people's lives have been transformed. Under their influence people are converted to Buddhism, Christianity or some other faith.

Another feature of this religious power is that those who incarnate with this power are very powerful, and therefore they can transform others.

Such people adhere to their convictions firmly even if they suffer tortures or defamation or have to face strong opposition.

But they are humble in their actions. The more they are virtuous, the more they remain humble. This humility shows off their virtues.

Thus, religious power depends on the observance of the highest code of conduct of purity.

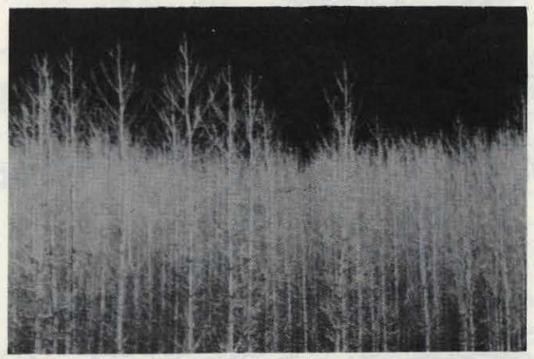
Do you have such religious power?

Do you have the balance between the sanskaras of ruling and the sanskaras of religious power?

Are you a sovereign now?

OM SHANTI

*The subtle powers are the powers of the mind and the intellect.
†Sanskaras — see "Body and Soul" article for explanation.
‡2,500 years ago.




THE
SAMURAI
WARRIORS

ONCE upon a time, long, long ago in feudal times, there were two Samurai warriors. Each was proud and strong and both were excellent swordsmen, sworn to chivalry and to help and protect anyone who needed their assistance, for in those wild times the villages in the Japanese forests were sometimes terrorized by bandit raids and savage animals.

They were fast friends and they lived in simple huts not far from each other near a beautiful lake in the depths of the forest, for the lord whom they served had been defeated in battle and could no longer sustain them in his court. They lived a somewhat ascetic life and often practised their martial arts together so they would not lose their touch or become dull and slow in swordsmanship. It was a pleasant life, natural, virtuous and elevated.

One day, by chance, as they were walking together discussing some matters of deep philosophy, one of the friends, whose name was Ishukawa, saw a beautiful deer flash by the corner of his eye and the hunter instincts awakened instantly. He ran after that deer like lightening. The other friend, Mishu, was in a pensive mood and sat down on a rock to wait for his companion's return. An hour or so passed and Ishukawa was not to be seen, so Mishu set out to search for him in case anything had happened. He went quite far and, standing on a bit of higher ground, he saw a glint in the sun and thought this must be indeed Ishukawa's fabulous Samurai sword catching the rays of the lowering sun on the decorated scabbard.

So he ran towards his very dear friend, sensing him to be in trouble. As he reached him he called, "Don't worry, I'll help you out," for he saw straight away that Ishukawa was up to his thighs in a quagmire. But Ishukawa said, "No, Mishu, I'm alright. There is no danger. A fine warrior like myself can surely come out from this trap." But Mishu was not convinced and he took up his own beautiful Samurai sword and stretched it out to his friend saying, "Grab onto this, my weapon, and pull yourself out. These quagmires are dangerous." But Ishukawa said, "Come on, Mishu. I'm not in danger. The day when I really am in a tough corner I" be glad of your help, but I don's want to get indebted to you for such a small challenge as this. I can get myself out, but right now I feel OK here. I will just stay here for the time being."

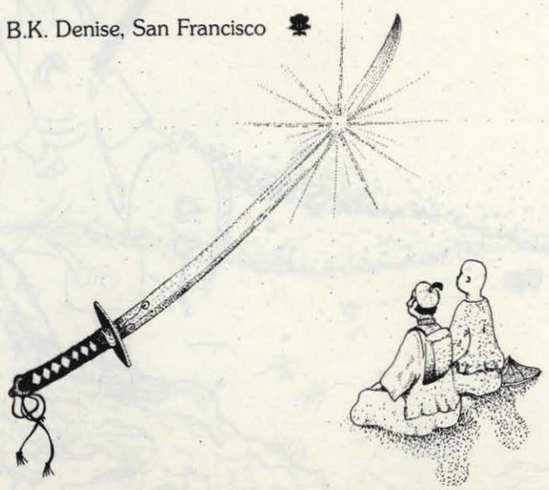
Mishu was puzzled, but he thought, "Ishukawa is a great warrior and I musn't lower his dignity by saving his life if he judges it not necessary. That would be against the code of honour for Samurai warriors." But he was concerned. He went to sit and wait for his friend a little way away because he knew Ishukawa wanted to be alone and find his own way out. But he watched without being seen. As the sun set and the moon began to shine silver light Mishu saw his friend had got chest deep in the oozing sludge of the mire, and he knew the danger had become great, so he went again and stretched out his sword to Ishukawa saying, "Now you're really in danger. I know you need help. Why don't you take it? Isn't your life worth more than your Samurai honour? Do I have to watch you drown in this pool of mud?" "Go away, you weakling!" shouted Ishukawa. "What kind of Samurai are you? Can't you see I have to pull myself out and I'll do it without you interferring. Go back to your bed and sleep!"

Mishu watched and saw the mire pulling faster now. Ishukawa was up to his neck, but he held firm. His hands were still out of the mud and Mishu was at the ready to pull. Then suddenly Ishukawa turned pale and said, "I think I'm going to die. Mishu, I don't want to die in this place. Get me out of here. Throw me your sword. Pull me out of here!" But it was already too late. Mishu put the end of the sword in Ishukawa's hand and pulled hard, with all his might, but he knew the quagmire would win. And then Ishukawa screamed, "Pull man, why don't you pull me out?" But Mishu said, "I could have earlier, when you were only thigh deep. I was strong enough for that but not for this. I'm sorry, I can't save you. You are too far in. I just can't pull you out and there is no purpose for me to join you in that mire, so that both of us would be lost. What about our contract to protect the villages? At least I can keep that up, but if we both go, then they won't survive the menaces of this forest. Samurai honour binds me to let you go alone and I can't pull you out with just my own strength."

Suddenly, from deep within the soul of Mishu a most powerful thought arose. It was the mental image of the great Father of Light, the Supreme Benefactor, the Protector of all true warriors, SHIVA. And as that image of Supreme Light and Might filled his mind, he knew they were not alone. In this hour of greatest need the Great One came to them. At that very moment Mishu's whole body was filled with energy and he felt his muscles tighten like iron. He looked deep into the eyes of his friend and Ishukawa also realized the presence of the Great One. He also could feel himself getting filled with light and might. As they both looked deep into each other's eyes, by the mental and spiritual power of true love and devotion to God and to duty, an extraorindary miracle began secretly to occur. The oozing, mucky, clinging sludge of the quagmire relinquished its grip on Ishukawa and power-filled Mishu drew him slowly out.

Their hearts danced with joy and sublime bliss at the wondrous benevolence of the Supreme One, SHIVA, the Light of the World, and at last Ishukawa was out, dirty but safe. As they sat on the firm ground in meditation giving thanks to the Protector, a voice seemed to whisper in the minds of both of them. "Oh my lovely children, My fine warriors, now renounce all passing desires. Stay with your duty and remember Me. Never forget me again." And they both made an internal promise to never ever leave Him out of their minds and they praised their great good fortune on their return home.

B.K. Denise, San Francisco



HEALTH AND DISEASE

This special section should be of interest to anyone practising any of the healing arts.

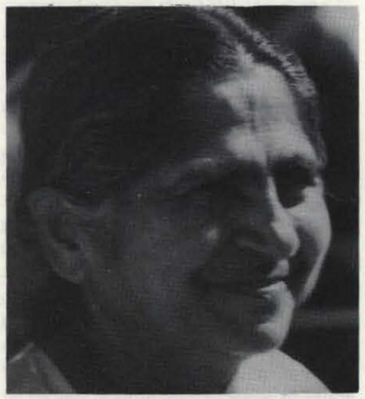
"Illness: Spiritual Causes — Spiritual Cures" by B.K. Janki, examines the connection between the mind, mental attitudes and disease. This article will answer those who wonder about the balance between the responsibility to care for the body's health, and the idea that sickness is cured by 'positive thinking'.

In fact, many forms of therapy which work on the body's energy levels such as acupuncture, zone therapy and homeopathy, become redundant when the mind has reached a clear and powerful stage of meditation. In a high stage of meditation, the mind is sending calm and constant healing energy throughout the body.

All that remains, then, is to treat the symptoms of disease as they arise, and to understand the cause of that disease through the understanding of the philosophy of karma.

Pure diet is an important foundation for meditation, and this also aids the health of the body.

ILLNESS: SPIRITUAL CAUSES SPIRITUAL CURES



by B.K. Dadi Janki

The following is a discourse given by B.K. Janki to a group of health professional and lay practitioners during her visit to San Francisco in August, 1981. The 65 year old diminutive woman, who has practised Raja Yoga for 46 years, has herself conquered a variety of physical diseases, among them tuberculosis, typhoid, heart attack, slipped disc, hernia and osteomalacia. Time and again, she has brought her body back to physical health, to the astonishment of her doctors.

B.K. Janki, known affectionally as 'Dadi' by all who have met her, has been stationed in London, England since 1974, where she has held the post of Director of Spiritual Service in the Western World for India's Brahma Kumaris World Spiritual University. During the past 7 years she has developed the ability to impart the depths of Eastern wisdom to westerners with profound clarity, simplicity and lasting impact. She is now becoming recognized as one of the foremost spiritual leaders of our time.

The majority of people who practise any form of yoga have at least a rudimentary concept of and faith in the philosophy of Karma. The term 'Karma' refers to the laws of cause and effect — the laws of action, reaction and interaction operating within the field of human relationships. The Law of Karma states that whenever any action has been performed there will be an equal and opposite reaction. 'Karma' is to the moral plane what Newton's Third Law of Motion is to the physical plane.

The Law of Karma works roughly in this way: if I have given sorrow there will be some form of sorrow returning to me. It may not be precisely in the way that old-fashioned people would speak about, an 'eye for an eye and a tooth for a tooth', but certainly some sort of seed has been sown. If it was a seed of goodness, then the fruit that will come will be sweet. If it was a seed that gave pain and sorrow, then the fruit that I receive in return will be bitter to the taste.

The time period between the performing of an action and the resultant reaction is variable. Just as different seeds need different periods of time in which to germinate, to grow and to produce fruit, so one cannot always determine which action it was that has led to this particular reaction; but certainly, if I am seeing a reaction, an effect, there must be a cause and the cause is not an external cause. The cause is I myself. In any situation that I find myself, nobody else, absolutely nobody else is responsible; it is I. It seems to be a very bitter law sometimes, in that it is one that is absolutely inescapable.

The cause of all sickness and disease essentially is Karma. Even the psychosomatic diseases are caused by Karma. Karma also applies to the mental attitude, not only to something I have actually done. My state of mind is also my responsibility.

Although Karma can seem a bitter law, yet, when we understand the law we can accept responsibility for future Karma. From that moment on there is no longer any bitterness, because we then know what to do. The understanding of the Law of Karma teaches us how to do pure action; we can then guarantee that, for the future, reactions will always be good, powerful and positive. It is possible to have a pill that can cure sickness for all time and that is the pill of Karma.

One cause of sickness is past Karma, past actions, but also the present negative tendencies (the vices — lust, anger, greed, ego, etc.) create dis-ease. The atmosphere of today's world also causes sickness.

Nowadays people find that they can't live with others but they can't live alone either. There isn't the love which enables them to live with others. They want love from all but are not able to give love to others. Essentially the reason is that the soul has become empty, devoid of peace, love and happiness and filled with vices. This is why there is sickness. A person does just a little bit and has great ego about it. Or a person isn't able to do something and loses hope. Souls have become very weak.

By blaming others sickness also comes. Some people constantly have a critical vision and are always blaming, criticizing or having doubts about others. 'They must be like this. They must have done this. This is why this has happened.' This fault-finding nature also causes much illness within. That illness is one that spreads; it is infectious and causes a lot of pain.

The ignorance of not being able to look after oneself also brings sickness. Sometimes there is great attachment and possessiveness with those who have caused sorrow and this will cause further sorrow and sickness.

When situations confront us because of attachment, blaming or ego, then there's the question, 'Why is this happening?" The question 'why' makes us stand in a queue of questions and this also causes illness. People get tired waiting in queues. If a person is constantly asking, 'Why did you do this? Why did you say this?' then there is distress.

Jealousy causes the heart to burn. The clash of personality traits also causes great sorrow. How can the sorrow which is burning the heart be eliminated? In tiny situations a reaction of great anger and ego erupts and there's the thought, 'I am the one who should be heard. Who are you? Why should I listen to you?' This causes a rise in temperature. Desires that are not being fulfilled also destroy true love, pure love and then there is only selfishness that exists. Sometimes there is a desire to perform good action and yet there is not the power to do that which is good, there is not the power to renounce that which is bad.

These, the conflicts with each other and within the self in action and interaction, are the deep, incognito reasons for the existence of sickness. Is there a cure for all this?

To finish all these things the medicine of 'Om Shanti' is needed. The meaning of Om Shanti is very wonderful. Om Shanti is not only a word, but an experience which can be achieved through meditation. It means put a full stop to everything and let the soul become completely peaceful and still. This is the greatest medicine of all. When the soul is experiencing the significance of Om Shanti, then God, the Supreme Surgeon, will let the soul experience detachment from the body and through that cure the sickness of the soul.

Normally, because the soul is in the body, it experiences pain. When the soul is not in the body, then whether you burn the body or cut it up in pieces there is no experience of pain. By going into silence and practising, experiencing detachment from the body, pain can be reduced, not just 80-90%, but even 99%.

The purpose of Raja Yoga meditation is to stabilize the mind, to keep it in balance; to be in the body and yet experience the consciousness of the self, 'soul consciousness'. There's such clarity and wisdom in this state that it becomes easy to see the cause of sickness and also to know the treatment to give oneself. Sometimes the mind affects the body and sometimes the sickness of the body causes disease within the mind. The power God gives through meditation is able to help both together.

If in reality there is sickness, Om Shanti is the medicine. If sickness is only in the imagination, this is also the medicine. Imagination needs medicine as well. If there is imagination (in the form of superstition) and I think that one medicine will work and another won't work, then I must also get rid of this mental attitude with understanding. If there is sickness in reality, there must have been some cause. That cause will also be annulled by Om Shanti. This is not to say that physical forms of medicine are no longer needed, but medicine taken with understanding will work more effectively. If there is sickness in reality and yet my mind is saying, 'No I don't want medicine' then this is not wisdom. One must have enough sense to take medicine if it is appropriate.

To simply ignore sickness with indifference or accept it with resignation is not enough to make it disappear. One must try and really understand why it has come. Perhaps it has been caused by anger, or by jealousy. If I can analyze this and change my reactions then I am changing the cause of the sickness. Understanding will take away half of the illness.

Understanding takes time. Sometimes I won't be in a mood to accept any of the things that suggest themselves as causes. Patience is needed. If I'm not getting the answer today or tomorrow, no matter — patience. If there isn't patience then any answer I receive will not satisfy me because my mind is too jumpy, too impatient. During this interim period (before understanding dawns), it's very important to have discipline and not to allow thoughts of worry to come. Worry increases the magnitude of sickness. Even if the sickness is just a tiny one, the worry that an individual has increases it to an enormous extent.

Sometimes sickness isn't causing as much pain as one's own anxiety about it. Anxiety causes further weakness and loss of energy and shouldn't be tolerated or encouraged. It should be transformed, replaced. But it's impossible to free the mind from anxiety unless you feed it with something else which is positive. If someone is hungry and you tell them not to eat, it's not going to work. Their hunger has to be satisfied. The mind also has to be given some food. To feed the mind with knowledge, to entertain the mind with beautiful spiritual thoughts and allow an anxious person to have thoughts of self realization is a method of keeping the mind free from other wasteful, negative things. To give good, pure company to another, to increase someone's courage and enthusiasm is also medicine.

If one gets angry with sickness, it returns again and again. If you get angry with someone you can't get rid of them. Don't get angry with sickness and argue, 'Why have you come? You shouldn't have come. It shouldn't have happened like this.'

One stage is to worry about something; a second stage is to have constant anxiety about it and the third stage is to be constantly speaking about it. When these three factors come together then even a tiny sickness becomes a huge bondage. When one speaks of sickness it's an indication that one has thought deeply and intensely about it and much time and energy has gone by in that. When it's time to call the doctor, then before he arrives the patient is thinking, thinking about the illness, about the different questions the doctor is going to ask and the answers to give. The doctor will ask, 'Did your parents have this sickness?' and the patient will think of his parents and all the sickness they had. If the doctor didn't ask such questions the patient would also be displeased.

Sometimes, when there's the experience of difficulty, there's the remembrance of other human beings and the question, 'Why isn't so and so helping me? Why aren't they doing something about this? What's going to happen in the future? Is there going to be no one who can help me?' Then there's not only nervousness generated, but also great fear and sorrow. In a situation where someone becomes disturbed and unhappy, their disturbance causes disturbance within the whole household. Sometimes the words of others also cause great pain. If a patient is told the sickness is imagination, it causes great sorrow.

Neither should we experience distress nor cause distress to anyone else, even if the cause of sickness is not known. The most sensible state is one in which I constantly maintain positive thoughts and don't allow negative thoughts to come. If I'm not able to do that then the second stage would be to be honest and speak about it. It will not help to become a martyr and put on an artificial smile and an act. Nowadays, there is a great deal of fear and cowardice. Many souls are too weak to be able to speak about what it is they feel, or they feel they cannot trust anyone and this causes even further weakness. It is also wrong to speak about what one feels in such a way as to cause pain and sorrow in the name of being honest. One must have such a relationship with God that one has both the courage and the wisdom to know what is the right balance to strike in such situations.

Raja Yoga teaches how to have a good relationship with the self, with God, with my own body, with other people, with my relatives and even with the elements of matter, with nature. To be a Raj Yogi means to bring about a change in the present situation with Om Shanti: to realize my own eternal state of peace and to experience a direct relationship, based on knowledge, with God the Supreme. It is also necessary to understand the cause of any present negative situation and to find a preventative method. By understanding the causes of the illness and by having loveful remembrance of God I can eliminate the effect of the past bad karma and can take from God the capacity, the power for present good karma. Generosity, the ability to help others in their situation, brings great benefit. To be able to analyze and understand is one aspect. The other aspect is Om Shanti. Whatever has been the cause, let me now return to my eternal consciousness and experience the eternal relationship with the Supreme so that I eliminate those causal factors totally.

Nothing is new. Learn to expect whatever is coming and learn not to be surprised by it, then you can cope with it. Use medicine, use the power of yoga, don't allow confusion to come. Keep yourself powerful, silent and tolerant. Remain peaceful and also do pure Karma so that you have the blessings of God and the blessings of other human beings. Then sickness will go away.

OM SHANTI

You should come into action as FIRE BRIGADES, extinguishing the fire of the atmosphere of tension and turmoil. Through your mental attitude and stage of deep peace, circulate the rays of peace throughout the four corners of the world with such power that disturbed and peaceless souls may feel and experience that you are the only few souls, Master Oceans of Peace, who are the philanthropists of peace throughout the entire length and breadth of the world. Just as light in a corner with darkness all around would naturally attract attention of all towards that light, even so, all should feel attracted towards you and expect to get peace from you amidst the atmosphere of peacelessness all around. Be the magnets of peace so that you could attract peaceless souls from afar. Grant boons of peace through your eyes, remind others through your mouth that they are the embodiment of peace, merge the thoughts of peacelessness in others through your thoughts (of peace). Spread your vibrations of peace.

MEDICINE AND MEDITATION

We have received a number of articles relating meditation to health. Here are some thoughts from three contributors.

1. Medicine and Meditation

Man today is placed in a situation of constant stress and strain. This state of mind contributes towards the society which currently thinks in terms of having more hospitals and doctors, rather than having people who are practically healthy. Due to all this stress, diseases such as coronary insufficiency, hypertension, allergic disorders, psychosomatic disorders, cerebral haemorrhage, adrenal exhaustion, ulcers, drug addition and insomnia have increased. Though medical science reached its peak in the field of diagnosis and treatment — we have better facilities and well-equipped hospitals — deaths due to these diseases is increasing. Though there is no doubt about the role of medicine in treatment of these diseases, we must also remember that "Prevention is better than cure". If we are able to remove the stress factor then many of these diseases can be avoided. This is where we must consider the role of meditation. Meditation is a means of linking the self to God.

Contact between Soul and God is established by means of thought, the Spiritual Energy. In medicine we took the body as one unit while treating the disease, but in meditation, there are two separate units, body and soul. The physical body is made of five elements, earth, water, ether, fire and air. These broad elements contain every element that is known to science. The Soul is a subtle point of light and might that resides in the middle of the forehead between the eyebrows, near the pituitary, — Soul is sentient and immortal. Here it is connected with brain and nervous system.

Soul has three faculties: 1. Mind — Thinking faculty. 2. Intellect —

reasoning and discriminating faculty. 3. Resolves — the ability to retain impressions of past thoughts in the form of attitudes, habits or moods. These are intrinsic inherent subjective powers which make it a live and sentient entity. By practising this awareness, one feels to be a brilliant point of light emanating rays of very high intensity. This power enables a person to break die-hard habits and addictions. The thought which a Yogi makes use of in meditation works like mental surgery. Positive virtues are implanted in place of negative traits. Bad habits now loosen their grip. Meditation enables one to have deep relaxation. This relaxation makes one calm and enables one to take decisions without any tension or undue pressure. The person becomes active, alert and stamina increases. He is less fatigued, and his happiness works like tonic to him. He is free from stress and strain factors and emotional disturbances.

While practising meditation I have experienced a current like ray flow in the body; This may be useful in paraplegia/hemiplegia where tone is the problem.

— Dr. Prem Masand,
Georgetown, Guyana

2. Consciousness and the Brain

Patients in their "out of body experiences" at times of clinical death have consistent descriptions of "leaving" the body and seeing it quite clearly below "themselves" and actually witnessing scenes and conversations in other rooms. Their sense of self, and wholeness and integration, however, remains the same. Separate from the body, they are still able to think, perceive and experience.

Intelligence, memory, thoughts are not tangible biochemical entities, but non physical properties or faculties of that non-physical entity we call "I". This discrete unit of metaphysical energy is also known as consciousness, and takes up a position of control within the brain.

The brain is in fact a highly complex system of biochemical pathways relaying information from one centre to another. This sophisticated computer functions to transduce the even more sophisticated energy form of the consciousness into electro-chemical signals that then translate themselves into physiological function.

We know if we stimulate one part of the brain we can make the arm move, but without this external interference where in fact does the initiating stimulus for a voluntary movement arise?

As the distinguished American Neurophysiologist G.H. Bishop put the matter recently, "We are accustomed to think of brain functioning in terms of two different sets of phenomena. One is physiological, involving analytic and integrative activity by means of which incoming information is organised to initiate and direct useful efferent responses. The other is psychological, involving such subjective phenomena as memory, sensory awareness and thinking. Often we mix these two languages and pretend that physiological and psychological categories can be correlated. But the one path leads inexcusably to search for living diagrams and usually winds up with a presumed biological computer. The other eventually runs up against the little man inside."

This sums up the predicament of present day neurophysiology, but in fact both phenomena do exist simultaneously.

The consciousness, soul, or essence of metaphysical energy is in fact the 'little man inside' or the computer operator. The body itself is capable of automatic functioning to a simple degree, but the actual driving life energy is the soul and its presence is what distinguishes a 'live' from a 'dead' body. Rene Descartes (16th Century anatomist) surmised that the best place to control the body would be in the area of the pineal and posted the Rational Soul at this point.

Anatomically speaking this is a vital area of the brain and here the conscious energy is positioned in the central part of the forebrain. It is intimately related to those neuroanatomical structures described as 'Limbic system'. Simply speaking this comprises the Thalamus and Hypothalamus (including the Optic Chiasma and Posteria Pituitary). These anatomical structures have a central vital role in the control of the organism. Another network known as the Reticular Activating System is also connected to the Thalamus. It seems that the consciousness acts in the same way through the reticular formation. Many anaesthetics produce an artificial body — soul detachment by acting on this system. The Thalamus receives sensory impulses from all parts of the body and has connections with most of the main masses of grey matter in the brain.

Diseases of the Thalamus may produce gross disorder of senation, movement and also disturbances of the emotions and changes in personality. The hypothalamus has various connections (via the medial forebrain bundle) to olfactory areas that fascilitate smelling and eating reflexes. It also influences both sympathetic and parasympathetic pathways. Hypathalamus is concerned with instinct temperature regularities, feeding be haviour, osmolality of the blood, regulation of reproductive function, cardiovascular regulation and regulates the activity of the anterior pituitary gland by release of hormones which in turn govern most of the major metabolic functions of the body.

Thus from this vantage point (in the brain) the extremely subtle yet powerful vibrations from this discrete source of energy we can call the soul, influences in a multidirectional manner all the structures of this region. These non physical wave forms transduce in the nervous system into electromagnetic and electro-chemical, physical energies which then, at incredible speeds and levels of complexity control and integrate life function in the body.

This energy in turn receives input from the outside physical environment and functions at a level even more complex and powerful than that of the physical body. The subtleties of this energy are as yet only superficially understood. This energy we call consciousness and it manifests itself as thoughts, emotions, memory, intelligence and personality characteristics in an analogous manner to electricity manifesting as heat, sound, or light depending on the appliance.

Science can make an instrument for the mouth, but it cannot transmit the voice of your mind. Through the power of silence, the voice of the mind of every soul will be heard by you as being so close, as if someone is speaking in front of you.

The somewhat arbitrary division or labelling of the faculties of this energy is done simply to understand more deeply how it operates. A diagrammatic representation shows how these faculties connect between themselves and the physical body.

Workshop:

The power of concentrating on reality is far more powerful than concentrating on fiction.

The power of thoughts over matter has been popularly demonstrated by those who can bend spoons, levitate objects or themselves or materialise various objects into their hands. We concentrate on something with the aim of imbibing some of its qualities. Thus by concentrating on a beautiful flower or picturesque scene we will experience some of the beauty, perfection or tranquility.

The most sought after quality is that of peace.

To understand the reality of my existence as a unit of conscious energy (sometimes expressed as a 'spark' a point of light like a star) is to perceive the truth.

The eternal, most natural state of this energy is to be peaceful, powerful, loveful.

It is the most natural state of the mind to think.

Thus we combine these two points and with my intellect fix in my mind's eye myself as a tiny spark of energy, no physical extensions or attributes.

In this state all I experience is peace.

I concentrate by thinking only *of this quality of peace and silence and myself only a point.*

— Dr Sarah Eagger,
Melbourne Australia

3. Yoga as a Therapeutic Tool

As members of the biomedical community we can benefit ourselves and our patients when we utilise yoga in the art and science of healing.

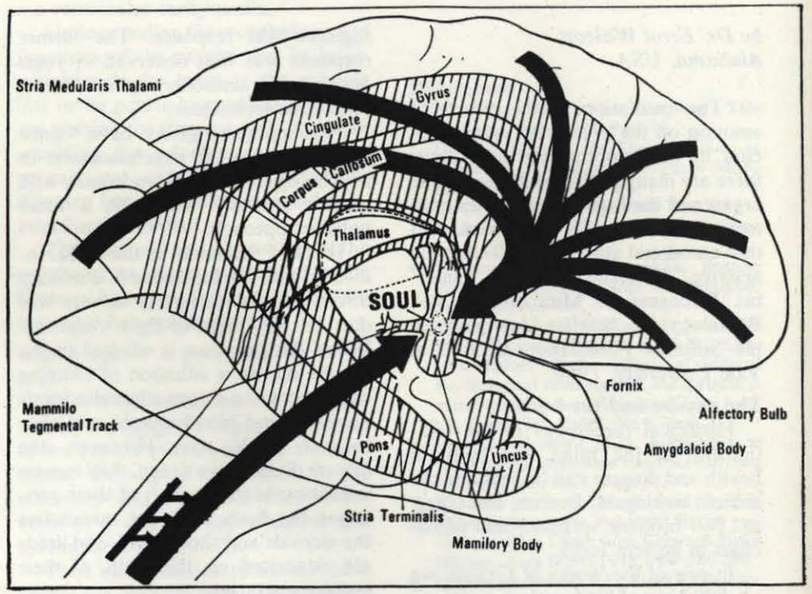
In the summer of 1978 Brahma Kumari Janki, a high calibre Raj Yogi and director of overseas centres of the Brahma Kumaris World Spiritual University, suffered a heart attack. Through her yoga power she survived the crisis and recuperated in the least amount of time and with little or no medical attention. An everyday patient suffering a heart attack, apart from bearing the physical pain and other pathophysiological aspects of this condition, has to contend with the psychological trauma associated with suffering from cardiovascular disease. Dadi Janki, through yoga power, was able to overcome the physiological and psychosomatic side effects and yet still behave as a healthy individual. On hearing of such a magnificent triumph over illness and possible death, biomedical scientists at the psychophysiology laboratories of the University of Texas Health Sciences Centre in San Antonio, Texas, conducted a series of tests on Dadi Janki. These later were performed when she visited the U.S.A. and included EKG, EEG, skin resistance and REM while in the state of yoga.

The doctors in Texas wanted to observe the psychophysiological responses of the body in yoga and how this aids the health of the yogi. Dadi Janki's power of concentration in yoga was such that the amplitude of the wave forms were constant, the EEG indicated delta waves though Dadi Janki was totally alert, yet relaxed! All functions were normal. The BBC in London, on being informed of the rigorous scientific tests, declared Brahma Kumari Janki to be the most powerful mind on Earth! The Texas results were corroborated by similar tests conducted in Australia on Dadi Janki. There, psychological analysis had revealed that her consciousness had gone beyond the super-ego state.

A year later at the Langley-Porter Psychiatric Institute at the University of California Medical Centre, similar and more in-depth studies confirmed all the above reports.

—Dr. Errol Walcott
Alabama USA

Soul and Brain Relationship



(From "Positive Health")

The duty of spiritual social-servers is to become lighthouses and give light to all. Lighthouse means the house of light; that place where there is a great deal of light. So, become the light-houses of the world and continue to spread the light. The light is always kindled in a light-house, only then are they able to give out light. If the light-house is itself without light, how can it give out light to others.

STRESS AND HEART DISEASE

by Dr. Errol Walcott,
Alabama, USA

"The mediation of the effects of emotion on the endocrine system occurs in the hypothalmus and, since there are many pathways between this organ and the higher centres, an anatomic basis exists for the obvious fact that emotional states affect endocrine activity." Dr Rene Dubos — Emeritus Professor of Microbiology and Pathology, Rockefeller University, in his Silliman Foundation Lecture at Yale University, 1965.

The psyche and the body

Historical recordings of the relationship of the mind and body in health and disease can be found in the ancient writings of Susruta and Charak, two brilliant surgeons and physicians in ancient India.

In one of the works of Gralen, we read that one of his female patients, an actress, would come down with fever in the presence of an actor with whom she was secretely in love.

Rhazes, that perspicacious Middle Age Arabic physician, described in his case records a young man who would manifest physical symptoms when the street in which his beloved resided was mentioned.

Dr Walter Bradford Cannon, late George Higginson Professor of Physiology, Harvard Medical School, pioneered many classical investigations in psychophysiology in the early part of this century. These experiments showed that emotional states affect the functioning of organs via the autonomic nervous system.

"Proof that stoppage of digestive movements was due to emotion was the beginning of the many years of research on the influence of fear and rage on bodily functions," said Dr Cannon in his autobiography, 'The way of an Investigator'. His work formed the foundation for the study of the flight-or-fight response in humans and other mammals, and other concepts in homeostasis.

Dr Herbert Benson, Associate Professor of Clinical Medicine, Harvard University Medical Centre, proposed the relaxation response, the psychophysiological antagonist for the flight-or-fight response. The former response was first observed in yogis and other practitioners of meditative relaxation techniques.

Psychophysiologists have since been attacking the psychosomatic or psychological related syndromes with greater intensity and with a more holistic approach.

In 1975 research in the U.K. indicated that the incidence of coronary thrombosis in racing-car drivers was due to the flight-or-fight response. When the response is elicited in the drivers due to a situation of extreme excitement, the serum adrenalin levels increase, and blood steroid and cholesterol levels rise. However, the drivers do not have to run, they remain sedentary in the cockpit of their cars, hence the body does not metabolise the steroids and cholesterol, and lipids are deposited on the walls of their coronary arteries.

In 1975 research in the U.K. indicated that the incidence of coronary thrombosis in racing-car drivers as due to the flight-or-fight response. When the response is elicited in the drivers due to a situation of extreme excitement, the serum adrenalin levels increase, and blood steroid and cholesterol levels rise. However the drivers do not have to run, they remain sedentary in the cockpit of their cars, hence the body does not metabolise the steroids and cholesterol, and lipids are deposited on the walls of their coronary arteries.

Cardiovascular surgeons, with help from psychologists, are discovering that negative emotional states become the precipitating factor in the etiology of some heart conditions.

The psyche and its heart

Incorporating psychological variables in the multifactorial causation of diseases, doctors are becoming more successful in appreciating and understanding the connection between emotional states of the mind and cardiovascular illnesses.

The Journal of the American Medical Association (JAMA) July, 1981, reports just such an investigation carried out by a team of psychiatrists and psychologists at Harvard Medical Centre.

The investigation was centred around 117 patients who had survived ventricular arrhythmia (irregular contractions of the ventricles of the heart, which is more serious than atrial arrhythmia) and were hospitalised for antiarrhythmic management. These patients were chosen because none had shown any physical (organic) lesions such as myocardial infarction (necrosis or death of heart muscle tissue) or thrombosis which would have affected the results.

The patients were interviewed separately by a psychiatrist and cardiologist. Medical data before the heart condition, was obtained both from each patient and his or her relatives. These included psychological experiences 24 hours before the major arrhythmic episode.

Psychological tests designed to detect physical brain damage and abnormal personality, (which would have been incriminated as being causative factors for the heart conditions), were found to be negative. This implied that the cardiovascular conditions were not due to neuropathological changes.

The tests included the Minnesota Multiphasic Personality Inventory (MMPI), the Multiple Affect Adjective Check List (MAACL) and the Bender–Gestalt Visual Motor Retention Test.

25 of the 117 patients experienced acute psychological stress 24 hours prior to the cardiac episodes. Ten such patients had their experience in the hospital and their behaviour was objectively observed and carefully documented.

The other 15 were gained from histories given by the patients themselves. Several of 18 such patients had two or more experiences of arrhythmia which were preceded by the recurrence of specific emotional states. The remaining 7 patients had solitary experiences of arrhythmia involving unique and intense psychological disturbances.

The circumstances leading to the psychological disturbances were as follows:— Inter personal conflicts, public humiliation, threat of or actual marital separation, bereavement, business failure and nightmares.

17 cases had as their predominant effect associated psychological disturbances such as anger and other states such as acute depression, fear, anticipatory excitement and grief.

In 15 out of the 25 cases the psychological disturbances preceded the cardiac syndromes by less than one hour. Cardiologists and epidemiologists have found that in many cases of sudden death due to cardiovascular syndromes, the victims suffered psychosocial disturbances, occurring hours, weeks and even months before the onset of clinical signs and symptoms of cardiac disease states.

Work over a 20 year period by Drs Meyer Friedman and Ray H. Roseman, both San Francisco cardiologists, in Psychosomatic Cardiovascular medicine has shown that in spite of controlling cigarette smoking and serum cholesterol levels, high blood pressure and other physiochemical risk factors, individuals with a type-A personality were twice as likely to suffer heart attacks compared to type-B individuals.

The psychosomatic pathogenesis of cardiovascular diseases

Though the mechanism or pathogenesis of cardiovascular diseases from a psychosomatic perspective has not yet been worked out, stress (psychological) has been found to be a predominant risk factor. This is especially so for such psychosomatically oriented conditions as ventricular tachycardia (increased rate of contraction of the ventricles above the normal value), ventricular fibrillation and hypertension. The seeds of psychological stress are the negative traits in the psyche of individuals.

The psyche is associated with that area of the brain between the hypothalmus and hypophysis (pituitary gland). Thought energy from the mind is converted into neuro-electric impulses (according to the first law of thermodynamics). Such impulses travel via nerves to tissues and organs in the body to affect physiological and biochemical functions.

Such impulses are also converted into biochemical messages (hor mones) which travel to target organs. Anger from the sub-conscious of the psyche would become active thoughts in the mind, be converted to neuro-electrical impulses and travel via the sympathetic nerves to the heart, causing ventricular tachycardia.

Understanding the morphology and functions of the psyche and its interaction with the brain is the missing link in the puzzle biomedical scientists are putting together to yield a model revealing the psychosomatic pathogenesis not only of cardiovascular diseases but of all infectious and non-infectious disorders.

The anatomy and physiology of the psyche in the brain propounded by the Brahma Kumaris Spiritual University is such a holographic model.

Raja Yoga — A preventative tool

Raja Yoga works on the principle that by changing the negative thoughts of the psyche (which are the seeds of stress) the organs innervated by the voluntary and involuntary nerves remain in a state of physiological and biochemical equanimity.

Thus the reduction in stress which causes the over reaction of organs and tissues resulting in reversible and irreversible organic lesions at a gross, microscopic and sub-microscopic level.

Dr Hans Selye, President of the International Institute of Stress, Canada, once said that stress is exacerbated by the inability to adapt and adjust to the stressor. Adapting and adjusting converts the stress energy into harmless constructive or creative energy.

Awareness of the existence and workings of the psyche through meditation enables the mind to become psychologically plastic, elastic, malleable and ductile to internal and external stress.

Remembrance of God as the "Supreme Psyche" — the one in a constant state of balance — elicits the relaxation response first given biomedical credibility by Dr Herbert Benson. The relaxation response is the psychophysiological antagonist for the flight-or-fight response.

The prevention and management of diseases can be enhanced by incorporating the concepts of Raja Yoga as they apply to biomedical science.

We in the scientific community would be forgetting the ultimate mission of medicine first laid down by the ancient physicians, if we failed to utilise such a positive adjunct to already existing medical skills.

References

1. Dr Dubos Rene: *Man Adapting.* Yale University Press 1965 Page 33.
2. Dr Marti-Ibanez, F: The Physician as Alchemist. International record of Medicine, June 1955, Page 406.
3. Dr Cannon, Walter Bradford: The Way of an Investigator. Hafner Publishing Company, 1965. Page 74
4. Wallace, Robert Keith; M.D., Benson, Herbert, M.D.: Physiology of Meditation, Scientific American, Feb 1972.
5. Combs, Robert L. M.D., Shah, Pravin M. M.D., Klorman, Rhonda S, Ph.D., Klorman, Rafael, Ph.D.: Effects of Induced Psychological stress on click and rhythmn in mitral valve prolapse American Heart Journal, June, 1980 Vol99, No 6, Page 7.
6. Imaizumi, Tsutomu, M.D.: Arrhythmias in Sleep Apnea: American Heart Journal, oct, 1980 Vol 100, No 4, Page 513.
7. Rissanen V, Romo M, Siltanen P: Premonitory Symptoms and stress factors preceding sudden Death from Ischalmis Heart Disease. Acta Scand 1978; 204: 389-396.
8. Corbalan R, Verrier R.L., Lown B.: Psychologic Stress and Ventricular Arryghmias during Myrcardial in the Conscious Dog. American Journal of Cardiology 1974; 34: 692-696.
9. Mumford, Emily, Ph.D.; Sciesinger, Ph.D., Glass, V. Gene, Ph.D.: The effects of Psychological Intervention on Recovery from Surgery and Heart attcks: An analysis of Literature. American Journal of Public Health, Feb 1982 Vol 72 Page 141.
10. Reich, Peter, M.D.; De Silva, Regis A, M.B, FR CP (C); Lown, Bernard, M.D.; Muraswski, Benjamin, J. Ph.D.: Acute Psychological Disturbances Preceding Life-Threatening Ventricular Arrhythmias Journal of the American Medical Association July 17, 1982, Vol 246, No 3, Page 233.
11. Spielberger, Charles, Ph.D.; London, perry, Ph.D.: Rage Boomerangs: Lethal Type A-Anger. American Health-Fitness Body and Mind. March/April 1982, Vol 1 Number 1, Page 52.
12. Selye, Hans, C.C., M.D., Ph.D., D.Sc., F.R.S.(C): On Executive Stress. Executive Health Publications 1981.

BOOK REVIEW

POSITIVE HEALTH

Written by Dr Girish Patel, and compiled by an editorial board of three doctors and three psychologists, **"Positive Health"** *explores the area of stress-related disease and suggests remedies. This work is best described by excerpts from the book itself.*

Chapter 1 — "The Physical Effects of Psychological Stress":

Psycho-physiological mechanism of rheumatoid arthritis

For many years it has been known that psychological stress plays a part in the causation and the exaggeration of rheumatoid arthritis. But what are the possible mechanisms by which psychological stress is translated into arthritic signs and symptoms?

Among the factors involved in the regulation of collagen synthesis and metabolism disturbed in rheumatoid arthritis, are the hormones — growth hormone, thyroxine, androgens, estrogens and adrenal corticosteroids. All of them have been shown to vary with psychological stress.

The changes in muscle tension associated with emotional stress, lead to particular diseases. In fact, the joint deformities which develop in rheumatoid arthritis are thought to have their origin in muscle spasms with flexor contraction and extensor spasm (Rodman, 1973). Solomon (1974) suggested that emotional distress may influence the immunological system through the central nervous system and pituitary-adrenal pathway. He also showed that in rats, IgG antibodies, similar to the rheumatoid factor observed in rheumatoid arthritis, were produced during stress under the control of the hypothalamus . . .

Psychogenesis of epilepsy

Every medical practitioner knows that epilepsy is due to local electrical discharges in the brain. It may be termed as an organic nervous disease, yet epilepsy is very often psychologically precipitated (F. Fremont, A. Ohiabov). Epilepsy may even be caused by emotional tension. S. Cobb has pointed out a psycho-physical mechanism in the production of epileptic attacks. "the emotional element in many cases is obvious at least as a precipitating factor. Many a patient will tell how his seizures are brought on by emotional stress. It is observed that convulsions which may be caused by emotional stress include physiological mechanisms. Fright, anger and other emotions are known to cause pallor of the face and changes in blood circulation elsewhere in the body . . . Emotion with its resulting vasoconstriction might cause a sudden and brief reduction of oxygen supply to the brain. For example, a boy previously frightened several times by dogs, was observed to have a fit with signs of 'organic' changes in the brain when accidentally barked at by a dog in our laboratory."

Anxiety invites infection

Normally it is thought that infectious diseases are only due to infective organisms. Contrary to this common belief a number of observations revealed that colonisation of a host by infective organisms does not necessarily result in illness.

Anxiety and other psychological stresses influence the rate of recovery from infectious mononucleosis (Greenfield, 1959) and influenza (Imoden, 1961) as well as the susceptibility to rhinovirus induced common cold (Totman, 1977) and tularemia (Canter, 1972). Recurrent herpes simplex lesions have been shown to be most frequent in persons who tend to feel depressed (Katcher 1973, Luborsky 1976). Anger has been known to alter the bacterial composition of the intestine (Holdeman 1976).

From the physiological perspective, psychological stress increases ACTH —releasing factor from the hypothalamus. Therefore, secretion of the adrenocorticotropic hormone (ACTH) from the pituitary is raised. ACTH stimulates the adrenal cortex to increase the level of cortiocosteroids. The increased blood concentration of corticosteroids and other steroid hormones depresses the immunological defence mechanism, which increases the susceptibility to infective organisms. Experimentally adverse mental reaction to separation (Coe 1978) and clinical depression (Sachar, 1975) have been shown to increase corticosteroid levels.

Adrenalin and noradrenalin (catecholamines) are regularly increased in response to stressful conditions (Frankenhaeser 1971). Both have been found to decrease various immune responses including anaphylaxis (Schmutzler and Freundt, 1975) and delayed cutaneous hypersensitivity (Kram 1975). Another possible mechanism

PHYSIOLOGICAL EFFECTS OF STRESS

SYSTEM	SYMPTOMS OR DISEASES
DIGESTIVE	Anorexia Nervosa, Peptic Ulcer, Ulcerative Colitis, Irritable Colon, Cardiospasm, Spastic Colitis, Nervous Vomiting & Diarrhoea.
RESPIRATORY	Asthmatic Wheezing, Broncial Asth Asthma.
CARDO-VASCULAR	Angina Pectoris, Coronary Insufficiency, Essential Hypertension, Techycardia, Arrhythmias, Vascular Headache.
ENDOCRINE	Hyperthyroidism, Diabetes Mellitus, Menstrual Irregularities.
SKIN	Urticaria, Warts, Neurodermatitis, Pruritus, Psoriasis.
CONNECTIVE TISSUE	Lupus Erythematosus, Dermatomyositis, Scleroderma, Polyarteritis Nodosa.

of immunosuppression is suggested by evidence that stressful life events are associated with increased uric acid levels that may suppress the immune function (Coe, 1969). Stressful life experiences have also been found to induce elevation in free fatty acid (Froberg, 1971) and cholesterol (Kasl, 1968) levels, both of which have immunosuppressive effects (Dilman, 1977).

The work of Meyer and Heggerty represents one of the few attempts made to consider both immune parameters and psychological stress in the onset of an infectious disease. They prospectively studied for a period of one year, members of 16 families with systematic throat culture for hemolytic streptococci, periodic measurement of anti-streptolysin-O-antibody titers and clinical evaluation of illness.

It was found that not only were acute or chronic family stress important factors in determining whether a person became susceptible to streptococcus or became ill after colonisation, but also that psychological stress influenced the proportion of persons in whom there was a rise of antistreptolysin-O-antibody titers after infection.

Chapter 2 — "Mind, Soul and Brain"

Physiology and emotion

Our emotions are considered to be governed by the limbic system, particularly the hypothalamus. But do the emotions really originate in this structure?

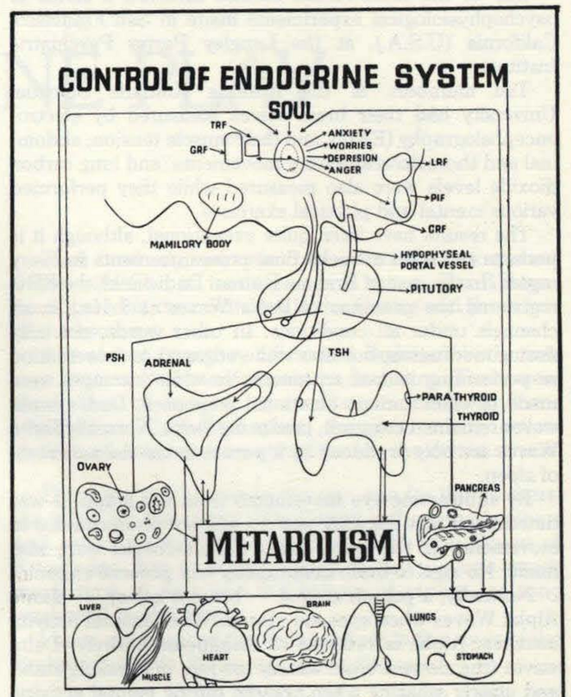
The first question which must be answered is: "if so, why is the horse so much less emotional than man?" For both limbic system and hypothalamus are identical in horse and man. If we seek the solution in the fact that the neocortex is not much developed in the horse, we must face the reply that neurological experiments have shown that the neocortex is not related to emotions at all.

Another answer might be that the horse's genetic system is different from man's, and that this difference is at the root of the disparity in emotional functioning of the two species. Here the study by Dr Robert Sinsheimer, president of the American Biophysical Society, becomes of interest. He speculates on the limits to thought inherent in the structure of the brain and tries to discover in what ways it might be extended by genetic modification. But he concludes that there is amazingly little chemical difference between human genes and monkey genes: he estimates a 4% overall difference.

Clearly the thinking power and emotional range distinction between man and monkey is many times more than the 4% genetic difference. The same argument will of course apply to that between man and horse. Thus an explanation based on genes is untenable.

Mind over matter

The Faraday cage is a cube constructed of fine copper mesh, which is electrically charged. This arrangement prevents all forms of material radiations (electrical, light, sound, etc.) from entering inside the cube. An expert in telepathy sits on an insulated pad inside the cage and tries to receive messages from a far distance. Now, if the brain is the ultimate organ of perception the subject should not be able to catch any message because no material radiation enters the cage. Instead, in practice with all outside electrical 'noise' blanketed by the cage, the subject's performances are notably enhanced. (MacDonald 1978). This experiment implies that the non-material power which exists in us receives the message and a non-material medium of communication is also present . . .



Psychological stress stimulates the secretion of the **hypothalamic factors** which in turn derange the secretion of the **pituitary hormones.** The hormonal changes disorganise the metabolism and the physiology of the organs. This change again disturbs our psyche.

(From "Positive Health")

Microelectrodes in brain

. . . As we have seen earlier, researchers have sought to localise the seat of consciousness in the limbic system generally pinpointing the hypothalamus as the particular region connected with our feelings and emotions. But the landmark experiments performed by White, along with other independent investigations conducted by Masserman lead to the conclusion that the hypothalamus is merely another servant of the mind, not the mind itself. When White stimulates the hypothalamus in human patients, he produced both sympathetic and parasympathetic discharge, but not strong feelings or subjective experience of emotions. Masserman stimulated the hypothalamus in cats and discovered that this produced a "pseudoaffective" response which was "mechanical, stereotyped and stimulus-bound." In no sense could it be interpreted as an emotion that was fully expressed and experienced. These experiments strongly suggest that although the hypothalamus is related to feelings and emotions, it cannot be the originator of them . . .

Chapter 3 — "The Technology of Positive Health"

One of the most recent studies involved a series of psychophysiological experiments made in San Francisco, California (U.S.A.), at the Langley Porter Psychiatric Institute.

Ten members of the Brahma Kumaris Spiritual University had their brain waves measured by electro-encephalography (EEG), and their muscle tension, abdominal and thoracicorespiratory movements, and lung carbon dioxide levels were also measured while they performed various mental and physical exercises.

The results have been quite exceptional, although it is perhaps too soon to make final pronouncements in every regard. In the case of Brahma Kumari Dadi Janki, the EEG registered the presence of Delta Waves (1-3 Hz.) in all channels under all conditions. In other words, not only during meditation, but also while engaged in conversation or performing mental arithmetic, or while attempts were made to elicit various emotional responses, Dadi's brain waves remained constant, producing Delta. Normally Delta Waves are only produced by a person in the deepest state of sleep.

By subtracting eye movements from the graph, it was determined that the wave pattern was not produced due to movements of the eyes. Other double-checks were also made. No sign of brain abnormality was present either.

Normally, a person at rest — but not asleep — shows Alpha Waves when eyes are closed. When mental activity increaes, Alpha is reduced or disappears entirely. Delta waves (the slowest brain waves) are rare in a waking state, and utterly amazing when present during mental activity. Other meditators (using different techniques) have also been tested, who produced Delta Waves on occasion, but never with the intensity which was registered from Dadi Janki.

Dadi had been previously tested in 1978 at the Medical Science Research Institute of the University of Texas (U.S.A.), and there her stability of brain-wave production was first noticed. As a result, she was called "the most stable mind in the world".

Again, in 1979, she was examined in Australia, where similar brainwave rhythms were observed. Based on these findings, Michael Hast described her as "A woman of perfect rhythm" (Ziriuz, Feb. 1979).

In simple terms, Dadi Janki had learned how to detach the mind from its physical engagements with the sense organs through the brain and nervous sytem. In this detached state, the body and brain are able to relax completely, while her consciousness, centred in the soul, rather than the brain, continues to function at peak levels. The difference between her own conscious apparatus and that of ordinary people is that due to the high level of her detachment, her cortex is no longer being 'driven' by sensory input and conditioned physical-thought response patterns. Her mind, in a state of liberation from physical attachments allows the cortex to remain in its inherent Delta rhythm.

The above conclusion is supported by other experimental evidence as well. For example, when the brains of animals are cut (with the animal alive and conscious) so that the cortex is isolated from the central region of the brain, Delta waves are produced. A Raja Yogi simply cuts the connection intellectually — through re-routing his mental energy — rather than through a physical operation . . .

. . . The system of Raja Yoga has now been so well analyzed and clarified by yogic researchers at the Brahma Kumaris University that beginners today can easily learn effective techniques to produce Delta or Theta Waves (4-7 Hz) mixed with alpha (8-13 Hz) and many physiological and biochemical benefits even after only a week of practice. And the subjective correlatives of such brain wave production are serenity, self-confidence and supersensuous joy.

Though all this may be experienced in one second, still it should be noted that for deep and lasting results sincerity, interest, and regular practice are essential . . .

In Chapter 3 the author goes on to outline a system of meditation for physical, mental, social and spiritual health.

"Positive Health" *contains a glossary of medical terms, and an extensive bibliography.*

[Published by Prajapita Brahma Kumaris Ishwarya Vishwa Vidyalaya, A/2 Dev Raj, S.V. Road, Goregaon (West), Bombay — 400 062; December 1981. Available from this address, or any of the addresses listed on page 48 of "Confluence."]



THE DIVINE PLAY

Om Shanti . . .

(. . . a testimony written, originally in French, by a Belgian monk after his stay with the Brahma Kumaris in London)

"I went to them, I saw them working, I lived with them, they have convinced me; I want to witness in their favour".

I went to London, such as I was: a Roman Catholic Christian monk non-priest, principally teaching and educating christian children.

I had met them months ago, first at Nassogne, then at my home, then at their place: The Brahma Kumaris, Sisters Lut and Marylene, Bindu and Brother Bruno.

They introduced themselves as teachers of prayer, as servants of God, of Baba, the Ocean of light, of love and virtues, Source of all wisdom, of peace, purity, freedom, of stability and happiness.

In London I met other Brahma Kumaris, men and women, intoxicated by Baba for His divine service. There I met brothers and sisters to whom the union with God is of inestimable value, an especially precious pearl.

They believe absolutely that there is a necessary relation of cause and effect between meditation and service, between mental prayer and dialogue, thoughts and action.

They are the "aristocrates" of the 20th century: and they count amongst the prophets of our time. In morning silence they rise at 4 o'clock to meditate in Baba's room, to re-experience Him, to re-discover the concealed and forgotten virtues which they had received as heritage from their Father. There is intense concentration for 45 minutes on the Unique One from whom comes all good.

Further meditation is at 6 o'clock, on the same conditions, followed by the reading of Murli (which is the message of Baba to the Brahma Kumaris, read by one of the Brothers or Sisters, who are already very united to God and His virtues).

Teaching in the form of classes between teachers and students follows this. These souls are determined, transformed, intoxicated by meditation, Murli and classes. These elite students drink the nectar of divine words, the powerful philosophy of the Supreme Soul.

Their brotherly welcome comes from their permanent union with God in meditation and action. For 3 days I participated in their activities in the Centre and the house of the brothers.

Just at that time they celebrated Brahma's birth, their own birth as Brahma Kumaris, as Brahmins. There were three days of festivity, of meditation, teaching, divine intoxication. Time and space, thoughts, words, action, desires, all only function with regard to the divine service.

There are two houses in the city, one for the brothers, the other for the sisters. The Centre gathers the brothers and sisters for the divine meeting. Baba, the Ocean of Knowledge, has so many virtues to bestow; one needs much time to recharge the battery of virtues, so long weakened by the vices.

I have experienced the divine virtues in the souls of the Brahma Kumaris. What was convincing was:

— their pure peace based on the Knowledge and absolute faith in Baba because everything from Him, returns to Him, happens with Him;
— their virtue of immaculate purity, because in His service there is only space for Him, the Unique Master, Almighty Guide of all thoughts, words, actions, desires;
— and their virtue of generous love, without calculation, without limits, caring for all souls, tolerant of weaknesses of body and mind, open to the rich and poor, the educated and the ignorant.

After three days I took leave. I returned to my own religious family, to my activities; rich in a new experience, which I had got in permanent union with the Supreme Soul.

Now it is my turn to play the game which I would call "Who loses, wins!". It is also the play of the Gospel of Jesus Christ.

It is now my turn to meditate on the divine virtues of the Father in the life of his incarnate Son with participation of the Holy Spirit.

The duty of spiritual social-servers is to become light-houses and give light to all. Light-house means the house of light; that place where there is a great deal of light. So, become the light-houses of the world and continue to spread the light. The light is always kindled in a light-house, only then are they able to give out light. If the light-house is itself without light, how can it give out light to others.

It is my turn to transform myself as Mary, the Pure, the perfect instrument of the divine Trinity. This Divine Instrument for the service of divine souls has given the divine and pure virtues of Jesus Christ to the children of God.

Now my convictions are reinforced regarding the divine means and aims.

My faith and Knowledge of the God, of Jesus Christ has only limits in the Revelation of the Gospel and the universal Church.

My will now is stimulated to total devotion and to divine service for the glory of the Supreme Father.

Now I believe and understand the Gospel words:

"Be perfect, like your Father in Heaven is perfect".

"Without Me you cannot do anything; with Me nothing is impossible".

"If you have the father as big as a grain of mustard-seed, you will move mountains".

"He who does not work with Me, works in vain".

"One cannot serve two masters: God or Mammon".

"Blessed are the poor in spirit, as they will inherit the Kingdom of God".

"Blessed are the pure, as they will see God".

"God made us in His own image".

Who would believe it, on seeing the evil made by men, the misfortune to poor and outcast? We are far from our original condition.

We have forgotten who we had been, and vice has veiled our divine reality. And therefore the existence of God is denied and men are judged to be basically bad and egotistical.

I thank Baba for teaching my soul, for illuminating it and for the decision to know myself better while knowing Him better, in order to turn vice into virtue.

I also thank the Brahma Kumaris for having taught this truth and to have invited me, through their example and through words, to employ the practical means to reach it.

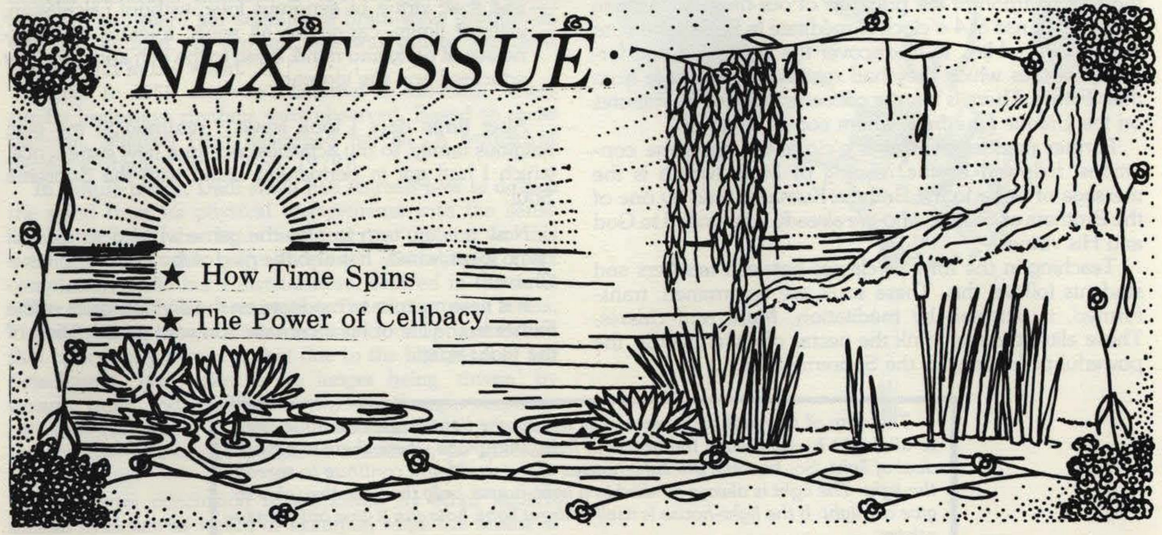
When the disciples asked Jesus where he lived, he said "Come and see". The disciples were seduced, many began to follow, but one day, they left him as "His speech was too hard for their ears".

Those who want to follow me, sell their belongings, distribute the money among the poor, leave wife, children and parents, take their cross, and they will receive hundredfold here and Eternal Life there". As I had a good start, I have the will to persist amongst the faithful.

There are many rooms in the Father's house and not only one way will lead there. I respect and appreciate the divine service of the Brahma Kumaris and want to engage myself fully, as a Roman Catholic Christian, bound to divine service by religious life.

It is a wonderful realization of my religious vocation to an efficient and specific service. May the Virgin and Mother of Jesus Christ be an example and give me the Knowledge to plant Jesus further into souls.

A soul who remains in self honour will be the donor of respect to everyone. Because he is full he will be always merciful. By giving respect he will uplift others.



ECO + Catastrophe

THE BATTLE TO FEED ALL OF HUMANITY IS OVER.
IN THE 80s and 90s MILLIONS OF PEOPLE WILL STARVE TO DEATH.
MOST OF THE PEOPLE WHO ARE GOING TO DIE IN THE GREATEST CATACLYSM
IN THE HISTORY OF MAN HAVE ALREADY BEEN BORN.
MORE THAN THREE AND A HALF BILLION PEOPLE ALREADY POPULATE OUR MORIBUND GLOBE AND ABOUT HALF OF THEM ARE HUNGRY.
BOTH WORLDWIDE PLAGUE AND THERMONUCLEAR WAR ARE MADE MORE PROBABLE AS POPULATION GROWTH CONTINUES.

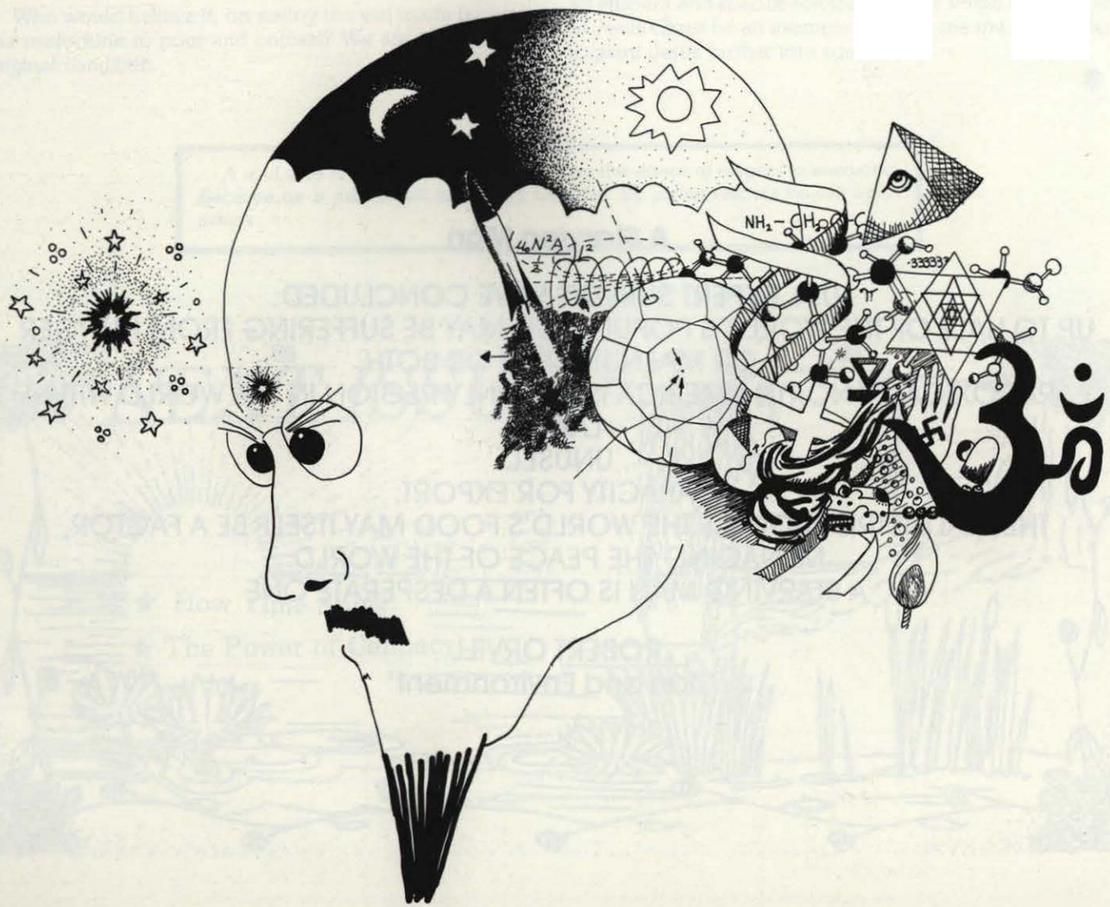
PROFESSOR PAUL EHRLICH

A Starving Man

U.N. EXPERT SURVEYS HAVE CONCLUDED:
UP TO HALF OF THE WORLD'S POPULATION MAY BE SUFFERING FROM HUNGER OR MALNUTRITION OR BOTH.
PARADOXICALLY NORTH AMERICA IS THE ONLY REGION IN THE WORLD WITH A
LARGE
UNUSED
CAPACITY FOR EXPORT.
THE MALDISTRIBUTION OF THE WORLD'S FOOD MAY ITSELF BE A FACTOR, MENACING THE PEACE OF THE WORLD.
A STARVING MAN IS OFTEN A DESPERATE ONE

ROBERT ORVILL
'Man and Environment'

THE GHOST IN THE KREMLIN



MOSCOW was dark and white, lying beneath a bed of purifying snow, in a winter silence which would soon be torn by terror.

Few pedestrians were out in the gripping cold of the night, only jack-booted soldiers and police squadrons upholding order against the ever present enemy of chaos and revolt.

Lights were still on throughout the Kremlin, signifying the occurrence of some international crisis which called for midnight meetings, couriers, radio dispatches, the hum of governmental activity at the highest levels in this nucleus which commanded the most powerful empire the world had ever known: the Soviet Union.

But nothing extraordinary was taking place. Only a skeleton night shift, keeping tabs on events in Afghanistan, Poland, and other trouble spots which had already assumed a character of normality at least from their bureaucratic perspective. There was, however, an unusual presence of guards in the corridors.

The supreme leader of the Soviet Union, Leonid Pretosvky was asleep. Yet he did not sleep soundly.

Two nights ago, Pretovsky had had been attacked in his bed. Not by revolutionaries or imperialist hit squads, but by something unknown, something terrifying. He did not name it, not even to himself, nor would any of his aides offer much solace, except to place guards in every doorway leading to his rooms.

The next night, while he was in bed, but still awake, the door to his bedroom began to open. Petrovsky sat up, grabbed the automatic pistol he kept beside him. He heard a roar, something between a scream and a menacing laugh which froze his heart. Petrovsky threw on the lights with a switch by his head, but they went off again instantly. A form became visible approaching his bed. He fired with his automatic, spraying the room with bullets. The thunderous sound alerted the guards, who ran in instantly, and one was almost hit by a stray bullet. But whatever thing had been there was now gone.

It was an embarrassing situation for Petrovsky. He knew deep down that few of them would believe that anyone had been there. Petrovsky was becoming senile, they would whisper, and it would spread around all of Russia, that he was seeing ghosts, or he was having nightmares, shooting wildly at apparitions like a madman.

But nothing was said that night, and he didn't try to convince anyone of anything. The KGB man just came in and listened and nodded his head, and said they would put a tape recorder in his room to record any more of the thing's screams or laughter if it came again. And the KGB man ordered everyone out and Petrovsky's doctor came in and gave the leader a pill and used his stethoscope and took his pulse, and then put out the light and wished Petrovsky a good night.

All that had been last night. Tonight seemed quiet. It was after midnight, the time when the thing had previously arrived. Petrovsky was sleeping, for the doctor had again made him take a pill, and even though the Soviet leader had wanted to refuse, he finally bowed to this man's decisions.

In the great hall below, the chandelier began to shake. The guards at the entryway at first thought it was an earthquake. Then they realized there was no swaying of the floor, but only of the giant circles of light, installed by a long dead czar. It seemed as if something was swaying on it like a monkey. The glass tinkled and bulbs fell to the floor and popped. Now the chandelier was going very fast, swinging like a pendulum on a ship in a storm.

And then it stopped.

The guards just stood there. They thought they might have seen something, but were sure they hadn't really. They looked at one another non plussed, and though their guns were at the ready, they backed away and waited, and were relieved when the shaking stopped and all was quiet again. One of them called the KGB man.

In another corridor, closer to Petrovsky's rooms, a knocking on the walls began. As if someone were pounding on them with his fists. The KGB man was called here too, and he came as fast as he could, cutting short his investigation of the chandelier.

There was a guard standing right in front of Petrovsky's locked door. From the corridor beyond, the KGB man heard the guard's scream. He ran, pulling out the gun from his shoulder holster while he ran, and the uniformed soldiers followed him.

The guard lay on the ground in a faint. The KGB man stepped over his body and tried to open the door. It was locked still. But he heard noises inside.

"Open it," he demanded in a fierce voice.

No one had the key.

The KGB man felt in the pockets of the guard, found the key, opened the door and rushed in. A form was on the bed, something grey and shadowy. The KGB man turned on the light and saw the thing fly through the window with a dangerous laugh.

Petrovsky lay spreadeagled, unconscious on the bed. There were finger marks on his throat.

The KGB man had them rouse the doctor, and the Soviet leader was revived.

The next morning there was a meeting of the Politburo. The nocturnal attacks on the leader were the prime topic of discussion; the KGB man was called in to offer his report. They asked him his suggestions.

"In the entire Soviet Union, I know of no one competent to deal with this matter, except one: the Brain Master."

Few of the Politburo members had heard of this top secret person, but those who had quickly nodded their heads in agreement. "This should have been thought of sooner," they said.

In Russia, there were several secret centers for dealing with paranormal phenomena, and the work was done under the charge of a German scientist captured during World War Two, who was known widely as the Brain Master within the ranks of those who were privy to his accomplishments. He had made tremendous break throughs in applying the power of the mind to practical purposes, especially for defense of the communist empire. Though many in this atheistic land remained skeptical, the Brain Master had proved his abilities, and it was said that he had been known to use his powers against his enemies, making him one of the most feared and respected men in the realm.

Petrovsky ordered him brought to the Kremlin immediately.

From his remote laboratory, the Brain Master received the orders a few minutes later. He was to be flown to Moscow in a special jet that was waiting for him. He sat behind his desk and smiled. "I am ready," he said to the messenger on the phone.

The scientist's real name was G. von Mukta. He was 55 years old, of medium height, and getting thick around the middle. He was bald, and

wore a dark mustache and a goatee. He had devoted his life to understanding occult phenomena and he was now on the point of the greatest breakthrough ever, perhaps the final discovery, which would give to humanity total understanding of the cosmos.

In two hours, he was standing in the visitors' gallery of the Kremlin, waiting to meet the Premier. Portraits by the old masters hung on the walls, where the last czar had had them placed. Von Mukta thought about them, and about Rasputin, that czar's advisor, and smirked at the parallel role he was now being asked to play.

He had been briefed on the situation while flying over on the jet. When he arrived in Moscow, he had been ushered into a car which held the KGB man, who explained more of what was expected. Von Mukta had only nodded and laughed. He wiped his mouth and figured how this ought to be played out.

Petrovsky entered the room and put an end to his reveries. The stocky leader was wearing a drab green suit with a few dull medals on his chest. His step was a little unsure, and he seemed pale. Nonetheless, von Mukta recognized the power which Petrovsky still contained in his mind, the tenacity and purposefulness, along with the fear and the need which kept him going, the psychic brew in which his soul stewed and sputtered, and of which the leader was scarcely aware. Von Mukta knew he would handle him with ease.

"How do you do, Professor von Mukta," said the leader, offering him his large hand.

Von Mukta took it, felt the sweat, measured the grip, and knew that Petrovsky was doing the same. "I am fine, sir. I have considered the problem here and it will be quickly removed."

The scientist got to the point immediately, in such a businesslike manner that it was clear to all that he was now in charge here. Petrovsky was relieved, and allowed him to take over the conversation. The KGB man was called in, and von Mukta gave orders for how he wanted things to be arranged in the Kremlin that evening — where he wanted guards to be posted, communication lines set up, and various types of machines of his own invention to be placed. All was done as he said.

Finally, Petrovsky asked the question. "What is it which attacked me?"

"Mr President, you have a ghost."

Petrovsky just stared at him.

"An unfriendly ghost, to say the least," von Mukta added. "I have handled many of these things in my career, and you need have no fear, I know just what to do. My own mental power is so great that the ghost shall not stand a chance. I shall remove its energy reserves and demolish it, for all practical purposes. Though of course, it cannot be killed in any ordinary sense. After all, it has already died. That is why it dares to do what it has done."

Petrovsky listened with a cocked eyebrow.

"The universe is made of matter in motion," he said, quoting the patron saint of the republic, Karl Marx. "Is a ghost a material being?"

"If I say no, will you conclude that it does not exist?" the Brain Master laughed.

"Just explain to me your theory. I do not believe in ghosts. Unless you can offer some materialistic definition of them."

"Perhaps we have defined matter in too limited a fashion, then," von Mukta replied. "I will say only this: the personality is capable of projecting itself into the external world, and it is capable of living an extra-cerebral existence, it is capable of taking over another being, it is capable of telepathic and telekinetic powers. This much has been confirmed experimentally. The mental waves which are given off by the — being which we are — does not register on an ordinary EEG, but I have developed an instrument which is sensitive to them. Therefore, it may be said that if not material, they are at least related to the material plane. However, there is no question that such powers transcend what is ordinarily thought of as possible. Of this you are already a witness, and are lucky to be alive to still dispute the question.

"All right," said Petrovsky. He took a papirossi cigarette from his chest pocket.

"Let me light it for you," said von Mukta. He pointed toward the table in front of them. A cigarette lighter slowly rose from the table, came through the air untouched, and stopped before the Soviet Premier's face. A flame burst up. Petrovsky looked at it blankly, seeming more pale than ever.

"Why don't you light up?" said von Mukta, and he laughed.

That night, Petrovsky went to bed at ten o'clock. He was nervous, tossing about and waking frequently.

Von Mukta sat in a plush chair in the VIP room. The KGB man prowled the hallways, and looked in on him from time to time, but said nothing.

Von Mukta had set up a small device, looking like an oscilloscope, in front of him on the table. He sat before it in meditation. The screened remained blank, while the minutes and hours passed.

At two in the morning, a blip came on the screen. Von Mukta opened his eyes wider, all six senses alert. Another blip, a ragged line, ran horizontally across the screen. Von Mukta got up. His own mind would take over from here.

He walked slowly to the door, focused on picking up the trail of vibrations, like a hunting dog seeking the smell of its quarry.

The KGB man came in. "Your little machines are beeping in the main hall," he said in a low voice.

Von Mukta nodded.

The walkie-talkie beeped once on the officer's belt. "Go ahead."

"There's pounding in the halls in sector three," came a voice on the line.

"Where's that?" asked von Mukta.

"Other side of the building," said the KGB man.

"Let's wait."

There was a noise downstairs. Something fell over. Voices. A shot rang out. A man screamed.

Von Mukta stood impassive, concentrated. Not yet, he was still waiting, he must wait until the last second to make the capture.

A Russian soldier bolted into the hall from below. "The thing is coming!" he shouted. "It knocked down one of the guards, and when another came over, it picked up the rifle and shot him."

"Okay," said the Brain Master. "Come in here and sit down."

The KGB man waited for instructions.

"When it comes, I will tell you. Then follow me into the Premier's room. I will sit in the chair. You must aim this special light at the ghost. That is all. Just do not be afraid. It feeds on our fear. I will do the rest."

Von Mukta then became silent again. The waiting seemed forever. On the table behind them, the machine kept up a chatter, registering large

spikes on the screen, as if the power, whatever it was, was enlarging, overtaking them.

"It has come."

Von Mukta looked toward the hall, and at the end of it was the door to Petrovsky's room. "It has gone in already, through the walls. Let's go."

As they walked toward the Premier's bedroom, they heard his voice from within. "Help, von Mukta! Come! Come!"

The psychic warrior put his hand on the door. A force field seemed to build around him. The KGB man behind him felt the energy rising there, he held the special flashlight in his hands and tried to keep his nerves steady. Then von Mukta went in.

A form was visible, grey and eerie and manlike but without flesh. Only a dark shadow of evil energy. Petrovsky had backed into a corner, he stood huddled there, his arms thrust out in front of him defensively. He was clearly terrified.

"Shine the light," said von Mukta.

The beam was not of visible light, but something beyond ultra-violet on the spectrum. It lit up the face of the thing which stood in the room before them. The face was haggard and dreadful, with empty eyes, but with clearly recognizable features.

"Minivich!" cried out the Premier. "It's you!"

The KGB man recognized the ghost as well. It was a former Politburo member who had planned to oust Petrovsky, but the Premier had eliminated him first. He was here to get revenge.

The ghost rushed toward Petrovsky, who huffed in fear and shrank to the floor.

"Stop!" ordered von Mukta in a deep, commanding voice. The KGB man turned to see what he would do. His hair stood on end when he saw. Another body seemed to step out of the body of von Mukta. It was his own ghostly form, but shone more brightly than that of the ghost of Minivich. Von Mukta's physical body slumped into the chair. But his astral form flew at the ghost with astounding force.

What followed was perhaps the most incredible wrestling match ever witnessed. The two nonmaterial forms grappled fiercely, and it seemed as if a tornado had entered the room. Objects flew about. Torrents of mental energy seemed to bounce off the floor and the walls. The KGB man thought he would lose consciousness. But he watched it all.

The astral body of the Brain Master subdued the ghost, held him down at last motionless, and it seemed as if the energy were being drained from the apparition. It became a darker and darker shadow. At last it was released, to disappear through an open window.

The astral form of the psychic master returned to his physical body. Von Mukta sat there, seemingly asleep. After a few minutes his eyes opened. He looked very tired. The KGB man was helping Petrovsky to his bed.

"The ghost will not return," said the master, and he left the room.

Life in the Kremlin returned to normal in the following days, filled with crises from nearly every part of the globe, political gaffes and coups, confrontations with the U.S. which pushed them to the brink of nuclear war, but nothing supernatural at any rate. The ghost had apparently vanished for good.

Petrovsky called von Mukta back to Moscow again, this time for secret ceremonies in which the paranormal scientist was awarded with the highest honors the Soviet Union had to bestow. In addition to the badges and titles with which he was decorated, the Soviet Premier ordered that his laboratory's budget be increased tenfold, and that he be given whatever he needed to further his research. Von Mukta smiled and told the leader that he would not be sorry.

"We have already made astounding breakthroughs, which shall make the Soviet Union supreme and unthreatened in the world."

At a private briefing to a small coterie of the inner circle of the Communist Party, von Mukta explained in more detail. "Our first development project has been in the field of telekinesis," he said.

"We have learned how to move objects with mind power alone, even at very great distances. We have concentrated on affecting the guidance and warhead systems of the American ICBMs. Already we have achieved great success. By concentrating on one circuit breaker in the mechanism, we can move it very slightly. It requires only a millimeter's dislocation to prevent the missile from firing, and instead exploding in its underground silo."

The scientist paused for effect. "Therefore, comrades, with a trained corp of parapsychic specialists, eacn concentrating on a single enemy missile simultaneously, we can destroy the entire American arsenal — and watch that imperialist country blow itself up while we remain seemingly innocent observers."

The leaders nodded to each other and their eyes glittered. It was clear that plans for this addition to their military force would be allowed to go ahead immediately.

"In the second place, we have developed contingencies for more limited warfare, as well as for achieving political victories of more exotic sorts. But I don't know if you are prepared for these things."

"Go ahead, comrade professor. You cannot frighten us," said one.

"Of course not," smiled the psychic master. "We have analyzed past wars, and discovered that there is a great wastage of manpower."

"How is that, Comrade?"

"We have not been making use of our dead soldiers."

"What?!"

"We have discarded our dead soldiers and written them off as if they were no longer part of the Soviet Army."

A silence followed, as if all were baffled at his strange idea. Finally Petrovsky himself spoke up. "In what way can they assist further the socialist cause, professor?"

"A Soviet soldier, like all other soldiers, is composed of two parts: there is an outer shell, which we call a body, and there is the intelligence within which operates it, which we may call a soul. The enemy can destroy our soldiers' shells, but not their intellects, not the souls. Therefore, I have developed a way of training our soldiers to remain conscious at the time of death, and for them to find wounded but living bodies of the enemy, and to take them over. In fact, we could even train them to invade the bodies of healthy soldiers on the other side. Thus, we would have no lack of manpower, and of course our soldiers in enemy bodies and uniforms would become the ultimate spies and fifth columns. They could easily spread havoc in the imperialist armies, destroying all continuity of communication and fomenting the most deadly sort of mistrust among themselves, until they would have to give up completely.

"This technique could even be applied at a higher level of course by advanced Soviet psychic experts, who could use their astral bodies to attack and invade the bodies of foreign leaders, turning them into puppets of Soviet Socialist Republics. I refer particularly to a plan I have developed to take over the body of the President of the United States, who is an especially weak soul and easily overpowered in this manner."

The scientist was again looked at with incredulity. But after a short discussion, he was given the go-ahead on this project as well.

"But all of these are small change, comrades. They are nothing compared to the real object of my undertakings, a project which will allow our republic to remain supreme in the world for centuries if not millenia to come."

Again the paranormal scientist halted and looked at each one carefully. "I must preface my words with the expression of understanding that the world has long been under the domination of priestly castes who have held the people hypnotized with the opiate of religion, a mass of nonsense and superstitious rituals having nothing to do with reality and not leading to the goals of higher consciousness but of further degradation. We Soviets however have been forward looking and able to comprehend reality with open minds. Thus we have discovered there is indeed a truth at the core of their false beliefs, and we have been able to extract that and leave the rest."

"To what are you referring?" asked one Politburo member.

"I refer to the fact that our great mathematicians Riemann and Lobachevsky, followed by a series of great Soviet physicists have opened the way to an understanding of other dimensions beyond the physical. Now the physical world we know cannot be self-standing. The energy of life for instance cannot have come from a source within the atomic or molecular structural grid. For it is an energy of a qualitatively different subtlety and dimension. Therefore, it is clear that we souls originally must have broken off some extra-dimensional nucleus in order to have entered into this space-time continuum, which is itself propelled forward in accordance with precise mathematical laws by the causality of the radiance factor of these nonphysical intruders themselves. Or ourselves, I should say. But the problem, comrades, is that these packets of living energy are also subject to the entropic laws which lead to pattern breakdown throughout the material structure function complex. I hope I am not being too technical. To make it brief, we have been feeding off each other, and now there is a grave shortage of the energy which may be classed as a higher form of electromagnetism, capable of bending the flow of time itself.

"The source of this magnetism must also be extra-dimensionally located," von Mukta went on with his lecture. He was in his own element now, and happy to be displaying his knowledge of things these mere political creatures had never conceived of, dazzling them with his intellectual superiority which he would use to make them his puppets, for though he was going to make the Soviet Union the greatest power of all time to come, he was going to be the one in charge of that power itself, he was going to become master of the entire world.

"Yes, the supreme source of this energy must be somewhere beyond the physical plane, but also it must be theoretically capable of being drawn into this plane, it must be capable of being captured, harnessed, and used for the service of the world. I believe, comrades, that I have found the way to draw down that energy and channel it for practical purposes."

"What sort of thing is this energy?" asked one of the listeners.

Von Mukta smiled patronizingly. "According to mathematical principles beyond dispute, this energy must be in an absolutely concentrated state. Therefore, it must be of infinitesimal size, of absolutely no dimension whatsoever. In other words, simply a point. A point of light. Yet that point would be filled with infinite power."

"Have you given a name to this particle, comrade?"

"I didn't need to. It already has one: God."

The meeting broke up in confusion and controversy. But Professor von Mukta had already demonstrated his remarkable abilities sufficiently to make it a certainty that the authorities would finally go along with whatever he proposed. Soon he was back in his laboratory organizing an expedition to the very source of universal life.

Von Mukta's plan was simple: he would first locate the greatest deposits of usable mental energy in the world, and focus them in himself. Then he would harness these and beam them beyond, into the higher dimension, and draw down the star-like source with the power of those vibrations.

Von Mukta had his secret devices planted in every region of the world, devices by which psychic pulsations could be monitored. He discovered that human beings gave off one of three types of vibration: the lowest were those which were totally chaotic and scattered, which occurred during periods of anger or lust or intense greed; a second type which were more orderly but still weak, usually accompanied by feeling states of doubt or of attachment to some object; and there were the very strong vibrations which occurred in periods of detachment and clarity of mind, which seemed to be focused in more unison. Those were the ones he could make use of. Von Mukta discovered this last sort of vibration was quite rare on a world scale.

Oddly enough, he found more of the purest sort of vibration in one of the poorest regions of the globe: in India. Therefore, he prepared to go there, and to fill himself with those vibrations until he was in a state of tremendous power. And then he would attempt the greatest feat of all — to take his mind to the dimension beyond, and to capture the holy grail, the Star of life.

Professor G. von Mukta arrived in India with a tiny psychic geiger counter which looked like an ordinary wrist watch. When he met a particularly powerful soul, it would tick loud enough for him to hear, and its digital face would register the change in psi units according to the one he came close to.

He first travelled to the Himalayan region, where he visited a remote ashram where a very powerful guru was supposed to live. As he approached the bearded sadhu on his blanket of leopard skin, von Mukta's psi counter began clicking, and the dial read increasing numbers, up to 14 units.

Von Mukta sat before the guru and looked him in the eyes. He carried on a simple conversation, mostly listening and asking questions, but all the time, the center of his powerful mind was focusing all its beams at this guru, extracting with his practiced technique every ounce of his psychic reservoirs. The guru became uncomfortable. He

gradually understood what was happening. He tried to get up, but he was held by the superior force of von Mukta's mind.

The guru's subtle body then began to emerge, as if to escape from the assault which was taking all his shakti (power) from him. But again von Mukta prevented it, and with his own astral body he gripped the other and held him still.

The guru's disciples did not understand what was going on. They sat there as if paralyzed, and now with his greater strength, von Mukta drained these disciples as well, leaving their own minds scattered and confused. When he got up to leave finally, they continued to just sit there, as if dazed and nullified.

Von Mukta went on to the next ashram. He had become a monster, a swallower of minds, a being of ever-growing strength. Each time he met and vanquished another yogi he became more powerful.

He entered the grounds of another ashram in the central plains of India. There was a master there who could produce ashes in his hands. Von Mukta laughed at him, held out his hands, and diamonds suddenly appeared there. "What good are your ashes, swami?"

Again he laid a grip on this swami's soul and squeezed the occult energies out of him. Then he produced a mountain of ash which covered the swami to his neck. Von Mukta left him helpless and blank.

At yet another ashram, where von Mukta's psi counter had registered a reading in the 30s, he sat before the 'jagat guru' and listened to his lecture, and in the middle of his talk, von Mukta silently began to float up in the air. The guru had been saying that one could learn through his mantra the ability to levitate. Von Mukta could not resist the temptation to show off. He then lifted the entire congregation of disciples off the ground as well.

As the guru watched from below, von Mukta stretched his psychic tentacles around him and forced his will's central core to give up its light to him.

Von Mukta dropped the disciples to the ground and strode away.

Von Mukta felt he had become invincible. With his gigantic powers he could alter world events. He could infiltrate the minds of world leaders at will. In fact, he could do literally anything. He had met the strongest, most disciplined sages and saints in the world, and he had ingested their power. He had vanquished them. He was master of the noesphere. Now all he had to do was to set up headquarters for himself and make himself known. He would take over control of the world from the stupid politicians. He would establish a psycharchy, government of the psychic masters, and he, G. von Mukta would reign above all.

Von Mukta's astonishing power had become evident. When he walked through crowds they parted for him. People looked at him and gasped, or backed away in fright. None dared confront him, not beggars nor even police. As he was walking through Bombay one afternoon, he suddenly heard the ticking of his psychometer. He checked the reading — nearly 40. Looking up to ascertain the source of this extraordinary radiation, he noticed a signboard which read:

Brahma Kumaris Raja Yoga Centre.

"Let's see what sort of guru hangs out here," von Mukta snorted as he turned into the courtyard. Up a flight of steps he was met by an attractive young woman — she couldn's have been more than 17 or 18 — wrapped in a bright white sari. Her dark eyes sparkled and a look of amusement was on her face.

"Yes? Can I help you?"

"Perhaps. I - - - felt the vibrations here. And I would like to meet your guru."

The girl laughed. "Oh, there is no guru here. But if you like I can teach you Raja Yoga."

"You are the teacher?" asked von Mukta, with interest. "You seem a little young to have such a position."

"Can you tell the age of a soul, sir? Or do you refer only to the physical?"

Von Mukta was now even more interested. How old was her soul — or his own? He had never considered the question. He became aware for the first time that perhaps there were some things he yet did not know.

"All right, then," he said. "Give me a lesson in Raja Yoga."

"I'm afraid we do that only by appointment, sir. Would you like to come back tomorrow about ten?"

"No. I would like the lesson now if you don't mind." Von Mukta exerted his psychic power toward her, not too much, but only enough to persuade her to change her mind.

She looked at him oddly. "You have studied other yogas," she said.

"Some," he answered, giving another dose of his manipulative will power. "How about that lesson now? I am leaving Bombay tomorrow."

"All right, then," she said. "Baba won't turn anyone away." The young woman turned on her heels and walked gracefully into the classroom. The scientist followed.

Many pictures hung on the wall, to which he did not pay much attention — except to one which immediately caused his eyes to widen. "What is that?" he pointed.

"I shall explain everything, brother. Be patient."

"I must know what you think that form is."

"OK, I will tell you. This is a picture of God, the Supreme Father. His name is Shiva. He is the Supreme Soul, who is in the form of a Point of Light."

"I have spent years of mathematical research to find that out. No one in the world knows it but me. How did you come to that idea?"

"The young woman laughed. "God is the Father of all souls. When He wishes to teach His children, then He comes down and incarnates. How else can it be? Who else but He can teach spiritual knowledge?"

"And what do you think you will do with that knowledge?" G. von Mukta asked.

"With this knowledge," she replied, "one can become master of the universe."

Von Mukta blinked. He had not expected that. Suddenly he felt he had to show this girl his power, he would teach her a thing or two about being a master. He hurled a tremendous beam of power through his eyes at her, and felt her recoil at once. He held onto her soul, which suddenly turned inward, as if packed up like a tortoise withdrawing its limbs. His energies encircled her but he could not pry her loose, could not steal from her the precious nectar of her spirit's essence.

And then, it seemed as if a fog had stolen into the room. A golden miasma veiled his sight. He turned in all directions, but nowhere could he see — all was golden light. A power was at work. Von Mukta reined in his intellect and sought to understand, to feel what sort of thing was present.

Then a vision came into his mind. A figure of a man was slowly walking

toward him. It was an older man, who walked deliberately and with great royalty and self-assurance. His eyes were strong, his square jaw set, his face calm and without rancor. He had a white moustache and his hair was also white. In fact, everything about him shone with pure whiteness. His clothes were white, his great white shawl seemed to be blowing slightly in a subtle current of ether. He stopped in front of von Mukta.

"This daughter is mine. You must not harm her," said the visionary figure. "Child, it is I whom you are looking for. Come to Mt. Abu, and you shall find Me."

When the figure of the man disappeared, the golden cloud was gone as well. So was the women in white. Von Mukta got up slowly, uncertain of himself for the first time, and slipped away.

The next day, von Mukta tested his psychic powers. He caused an electric blackout merely by willing it. He uprooted a giant tree with his psychic tentacles. He reduced a twelve-storey building under construction to a heap of rubble. Again he felt invincible. In this condition, he boarded a train for Abu Road.

From that small junction town, he hired a taxi for the circuitous ride up the Rajasthan mountain to the hill station which held the famous temple of Dilwara. When he got there, von Mukta turned on his psychometer to help him locate the place where he would find the guru of the vision.

Walking around Nakki Lake, the ticking of the meter picked up significantly. It was up to fifty when he reached a road which contained a weatherbeaten sign: Prajapita Brahma Kumaris World Headquarters.

A hundred or so yards further on, the ticker was reading almost ninety. Von Mukta saw before him a white building, seemingly the source of the vibrations. He passed beneath a white archway and into a wide, long courtyard. The vibrations were up into the hundreds. No one seemed to be around. He wandered through the open area between the building, and saw an interesting monument. Going closer, he read these words inscribed on it: Tower of Peace. The reading there was over 500.

A man in white kurta and pajamas had been watching von Mukta and now came up to him. "Welcome, brother," said the man. "Our administrative head is waiting to greet you. Come this way."

Von Mukta allowed himself to be led along a corridor, into a small white room. There he saw another painting of the point of light, Shiva, the Source which von Mukta had been seeking, and also of the man whom he had seen in the golden vision. The nameplate below that picture said: Prajapita Brahma.

Seated in the centre of the room was an extraordinary woman. She looked old but very young, innocent but very wise, experienced yet completely pure, as if not of this world.

The man introduced them. "This is Dadi Kumarka," said the man.

"Good morning," Dadi laughed. "Your name is Professor von Mukta?" she asked with eyes asparkle.

"How did you know?"

"Baba told us. You met Baba."

"I had a vision of this man." He pointed to Brahma's image.

"It wasn't the first time," said Dadi. "Do you remember when you were here before?"

"I was never here before, Madam," he said bluntly.

"Oh yes, oh yes, 5000 years ago, you were here."

Something stirred within von Mukta. Some inkling that all his powers were to be of little avail here, that the people here had knowledge beyond his own. His psychometer was reading a thousand now.

"You were trying to find the Point of Light," said Dadi, "but now He has found you. You should be very happy. All that power you have, it is very much. But without purity, what can you do? How can you have the help of God? How can you have happiness?"

Von Mukta realized suddenly that it was true, he did not have happiness. His psychic achievements had left him as unfulfilled as he had ever been.

"The Point of Lighthouse has come here because no one was happy any more, even though they had more power than ever before. So which is better? Power or happiness?" Dadi asked.

"Can one be happy if one is powerless?" asked von Mukta in reply.

"When the soul is pure, it is automatically both powerful and happy." Dadi handed the visitor a piece of sweet candy. "This will make you happy," she smiled. "Your trouble is fear, and then too much ego. Otherwise, OK. Why not? You are Baba's child."

"Where is the guru? Where is this Baba?" he queried.

"Not here. Up there," she pointed to the sky. "But He is coming later, just to see you."

Von Mukta was given a room in which to rest, and then several hours later, he was called by the same man who had met him the first time.

Von Mukta was feeling very strong again and confident. He entered a large hall used for mass meditations. A big crowd had already gathered there and were sitting cross legged on the floor, men on one side, women on the other. Von Mukta was ushered to the front, where he sat before an unoccupied raised white platform, called a gaddi.

In a few minutes, a very stately woman entered the hall and sat on the gaddi. Von Mukta was at first disappointed that it was not the guru he had expected. Then he saw that this woman was going into trance. He used his powers unobtrusively to monitor her state. The psychometer in the room was registered over 10,000. Von Mukta first thought it must be out of order. He realized that the vibrations of everyone in the hall must be contributing to the high reading, but still it was nearly impossible to imagine.

He felt that the woman's soul suddenly was not there any longer. It was a strange moment. His heart beat faster as he tried to prepare for what was to come. Then it happened. Von Mukta felt so magnificent a presence enter the room that for a moment it terrified him. He had the urge to run. He checked the meter again. It was rising faster than he could read it. A million, two million, ten million, the numbers changed constantly, and finally stopped at the sign of a horizontal 8. Infinity.

The woman's eyes opened. Von Mukta could feel that another soul had entered that form. It was him, the one from the vision. Just to be sure, he got out his special flashlight for a moment and shone it on the woman's face. Someone tried to stop him, but Dadi said "leave him alone". With the light on, it was no longer the trance medium, but the subtle shining face of Prajapita Brahma. He nodded his head at von Mukta, who clicked off the light and concentrated all his powers on this being from another world.

"Today . . . The Ocean of Power has come," spoke the visiting spirit through the medium, "to meet the challengers of God. What does it mean to challenge? It is to become like the Father. To be an ocean of purity and of peace. It is to be a lighthouse to the world.

"Those who use powers destructively cannot be challengers. They only destroy themselves. You know the story of Hirnakashap.

"Have you learned to leave the body? Where have you learned to go? To fight or to serve? Which is the way to earn a world kingdom? Do you know? Can you defeat the laws of the universe? Can you prevent the fruit of karma from emerging? Would you wrestle with God? Will the fish oppose the Ocean? Now is the time not to wrestle, but to wrest the kingdom for yourselves."

Von Mukta was growing uncomfortable again. He decided he must test this being with his own power. Slowly, his astral tentacles began to rise up toward the gaddi.

At that moment, Baba turned to him, "You wish to go beyond, don't you?"

Suddenly von Mukta felt his soul was being lifted out of his body, not just from his physical body, but even out of his astral body. There was no question of fighting against this power. He was in the hands of an Almighty Force. He felt himself flying upward, lifted helplessly beyond the earth, beyond the moon and sun and stars, into the dimension he had always felt was there in theory. Now he had arrived, in the palm of God. He saw the vision he had craved: The Supreme Point of Light. He experienced that he was being washed clean of his arrogance and evil, the darkness which had filled him. He also was a point of light, not more nor less.

He realized that this world process was in the hands of the Supreme God, and that he, von Mukta, had been foolish to think that he could master that omnipotent force for his own ends. Only by surrender to Him was victory possible.

Then he was transported to another region. He saw the Point of Light enter the body of the man whom he had seen in vision in Bombay. A voice told him this was the perfect form of Brahma, the first deity, created by the Father to establish the new world. Brahma had been an ordinary mortal whom God had entered to teach the world true knowledge. Now Brahma had become the first perfect man, the highest and original angel.

Von Mukta realized how puny all his powers were in the presence of these almighty ones, the combined form of Shiva, the Supreme Soul, and Brahma, the father of humanity. It was easy enough to challenge human gurus, but here he was so outclassed that the very thought was spiritual suicide. It all flashed before his eyes, his whole foolish life, his whole shameful nature, in the space of an instant.

Then he was shown a vision of the coming destruction of the world, through war between the Soviet Union and America. He saw the planet transformed through earthquakes, tidal waves, and a drastic shift in the earth's axis, which submerged whole continents and caused others to career wildly on their tectonic plates. The layers of the atmosphere, punctured by the thermonuclear explosions, released the poison radiation into the van Allen belts. New cosmic rays poured in to nullify the remaining wastes. Rains pelted the earth, no longer inhabited except for a few survivors. Then von Mukta saw the creation of a new civilization, of pure souls, godlike souls, residing in golden palaces and living in peace and happiness. It was the kingdom of heaven.

At last he understood his own error, and the reason for it.

Brahma's form was now in front of him again. "To know the Father is not enough. There must be love."

"There is admiration, and wonder," said von Mukta. "There must be love as well. If a soul such as I can love."

"Every soul can love, or it could never be born."

Von Mukta returned to the meditation hall. Again he sat before the trance medium whom he recognized as the same Brahma, and he felt that Almighty Point of Light, Shiva, shining in the forehead.

"Go back to Moscow," the Father said to him. "Tell Petrovsky he must become Shreshtdev*. Then he too can share in My inheritance."

"Yes," he said. He was like a child.

"Never use your astral body again. I have made for you a new body, an angelic one. Only with that can you reach Me. With the other you will only destroy yourself."

"Yes. I understand. I have vanquished many ghosts. Now I surrender to the Holy Ghost."

Baba smiled. "Accha," He said. Soon He was gone above.

G. von Mukta left quietly for Moscow.

*an elevated deity

Robert Shubow San Francisco U.S.A.

to view all people as brothers and a shift in attitude towards cruelty to animals.

To channel the need for power into more positive, environmentally conscious pastimes and develop a more altruistic outlook on life removes the desires to consume material goods and thereby aid in environmental degradation.

By becoming non-violent and positive other people are automatically benefitted and hopefully the process of harmony will spread from this level, rather than waiting for change in the giant political and industrial institutions.

BIBLIOGRAPHY

1. Australian Year Book, 1978.
2. Bell, G. 1981. 'Women now more violent'. In the Bulletin, July 28, 1981. pp.56-60.
3. Goldbloom, S. "The arms race: inflation, unemployment, nuclear oblivion". Aust. Peace Liaison Committee, Sydney (Pamphlet).
4. Johnson, R. 1972. "Aggression in man and animals". W. B. Saunders Co., Philadelphia.
5. Kutash I and Kutash S. 1978. "Violence". Jossey Bass Pub. USA. and Schlesinger, L.
6. Morgan, King and Robinson 1979. "Introduction to Psychology". McGraw Hill, Tokyo.
7. Passmore, J. 1974. "Man's responsibility for nature". Gerald Duckworth Co. London.
8. Singer P. 1976. "Animal liberation". Johnathon Cape, London.
9. Time Magazine, Nov. 26, 1981.
10. Ward B and Dubos R. 1972. "Only one earth". Andre Deutsch, 1972.
11. Wertham F. 1962. "A sign for Cain". Macmillan.
12. Wolman B. 1972. 'Prevention of violence', in Kutash et al, see above.
13. Strange S. 1974. "Reason and Violence". Basil Blackwell. Oxford.

BRAHMA KUMARIS WORLD SPIRITUAL UNIVERSITY
MAIN CENTRES THROUGHOUT THE WORLD (as of Dec. '81)

MAIN HEADQUARTERS	Brahma Kumaris World Spiritual University Mount Abu, Rajasthan, India	
EUROPEAN HEADQUARTERS	Brahma Kumaris Raja Yoga Centre 96/98 Tennyson Rd., London, NW 6, England	(01) 328 2478
AFRICA		
Kenya	P.O. Box 83980, Mombass	
Kenya	P.O. Box 43543, Nairobi	23616
Zambia	P.O. Box 1168 Lusaka	51474
Zimbabwe	P.O. Box 140, Bulawayo	61727
AUSTRALIA		
Sydney	606 Crown Street, Surry Hills 2010	(02) 699 2841
Melbourne	33 Brunswick Street, Fitzroy	(03) 41 4883
Canberra	102 La Perouse Street, Red Hill 2603	(062) 95 9845
Adelaide	100 Kensington Street, Toorak Gardens	(08) 332 9264
Brisbane	14 Aberleigh Road, Herston 4006	(07) 52 2194
Perth	6 Florence Road, Nedlands 6009	(09) 386 7414
Hobart	137a Elizabeth Street, Hobart 7000	(002) 23 5460
BELGIUM	71 Hugo Verriestlaan, Kortrijk 8500 Sint Denijslaan 269, Gent 9000	
BRAZIL	Rua Dr. Estevao de Almeida 53, Perdizes, Sao Paulo 05014	864 3694
CANADA	19 Lakeview Ave., Toronto, Ontario M6J3 B2	(416) 537 3034
COLUMBIA	Calle 25C #3-80, Apto 401; Bogota D.E.	271 3951
ENGLAND	51 Lawnshall Close, Leeds LS168HY 96/98 Tennyson Rd., London NW 6 7SB (European Headquarters)	(053) 261 1479 (01) 328 2478
FRANCE	50 Rue de la Bissadoa, Paris 75020	358 4427
GERMANY	6000 Frankfurt/Main, Bornheimer Landstrasse 27 2000 Hamburg, Grasweg 13	49 5464 48 5799
GREECE	c/o Omega Films, 59 Veranzeron St. Athens	523 245/524 7867
GUYANA	75 High St., Kingston, Georgetown	72538
HOLLAND	38/40 Princengracht, Amsterdam	257546
HONG KONG	"Golden Crown" G Block, 9th Floor, Nathan Rd.	68 4693
INDIA	Road No. 3, Lot 48, Juhu Scheme, Vile Parle, Bombay 25 New Rohtak Rd, Karol Bagh, New Delhi – 5, 1A Ashutosh Mukherjee Rd., 20 Calcutta	 519814 47 3521
IRELAND	Flat 2, 11 Clyde Road, Ballsbridge, 4 Dublin	
JAPAN	7-8 Kita Shinjuku, 3 Chome Shinjuku-ku, Tokyo T160	03-369-4473
MALAYSIA	4 Jalan Taban Satu, Lucky Gardens, Bangsar, Kuala Lumpur	942 068
MAURITIUS	2 Louis Nellan Lane, Quatre Bornes	54 6021
MEXICO	304 Benito Juarez Blvd., Cuernavaca Morelos	3-11-51
NEPAL	Sideshwari Nivas, Pradarshani Marg, Katmandu	13870
NEW ZEALAND	83 Williamson Avenue, Grey Lynn Auckland 4 Heretaunga Street Pentonne Wellington	76 0237 68 8414
SCOTLAND	20 Polwarth Crescent, Edinburgh EH11 1HW	(031) 229 7220
SINGAPORE	33A Fair Drive Singapore 1543	447 4279
SPAIN	S. Antonia Ma del Claret, 166-1/1a, 25, Barcelona	
SWEDEN	Fisksatratorg 9 s-13300 Saltsjobaden Sweden	7172981
SWITZERLAND	8037 Zurich, Burgstrasse 14	01-42 94 54
UNITED ARAB EMIRATES	Survey Section, P.O. Box 67, Dubai	43 6012
UNITED STATES OF AMERICA		
Alabama	106 Charles St., Tuskegee 36083	(205) 727 6172
California	1619 Clement St., San Francisco 94121	(415) 668 3487
	11600 Atlantic Blvd., Lynwood 90262 (Los Angeles)	(213) 635 4846
Michigan	19950 Avon, Detroit 48219	(313) 255 2479
New York	#B8 36-05 29th St., Astoria 11106 (N.Y.C.)	(212) 729 0938
Texas	710 Marquis, San Antonio 78216	(512) 344 8343
WEST INDIES		
Barbados	"Desmond" Top Flat, West Ridge, St. Michael	
Trinidad	46 St. James St., San Fernando	



UFOs - THE WORLD WIDE ENIGMA

"If you shut up truth and bury it under the ground, it will but grow, and gather to itself such explosive power that the day it bursts through it will blow up everything in its way." . . . Emile Zola.

Since the 24 June 1947 - when pilot Kenneth Arnold reported observing nine shining "saucer-like" objects flying at 1200 mph over the Cascade mountain range of Western Washington USA - the controversy of the UFOs has been raging.

But many do not know that Arnold's report was NOT the beginning. No-one can say when the phenomena of UFOs began any more than one can say when history began.

To the people of the Space Age, UFOs have become the will-o'-the-wisp of the heavens. Their legend has the elusive qualities of quicksilver. They are real - or the products of an overactive imagination. The night sky holds a thousand of them - there is nothing up there. Crowds watch their aerial manoeuvres - mass delusion or swamp gas. Sometimes they are hostile - other times they are reckoned to be "brothers" from advanced civilisations. Real or unreal, "Flying Saucers" are legend.

But do they really exist? Reports from accredited sources of UFOs seen in the sky have become so numerous that we must, at least, accept the fact that these observers are seeing something. Many hold, of course, that the matter can be simply explained - meteorites, weather balloons, satellites, even hallucination.

The Victorian UFO Research Society, in a clear and objective analysis of all such theories and sightings, states that beyond doubt phenomena exist which cannot be dismissed in such a way - that objects remarkable for their size, speed, shape and performance have been seen by observers in various parts of the world, who, without reference to each other, have described them in astonishingly similar terms.

UFO reports depend on only two types of evidence:-

i That of people on earth suddenly caught by surprise, not on the lookout, straining up to the sky and seeing for a few minutes (or even moments) at uncertain heights, objects flashing and dancing - almost the worst type of observation even when the observers are trained to look for sky travellers. No wonder they tell us little - and it is even more remarkable that photographs have been secured.

ii The second type of evidence is more reliable. This comes from trained observers on the ground and in the air - pilots, radar technicians, air force personnel etc.

There is a popular notion which has gained considerable credit that the USA is a favoured area for the appearance of UFOs. Nothing could be more fallacious. We should bear in mind that the USA is larger in area than that of Australia and that there are far more people and, ipso facto, more observers living there. Furthermore, in the USA there has been in existence for many years an official investigating commission which collects reports of phenomena and incidents observed in all parts of the country, whether by members of the USAF - who have received general orders to do so - or by private individuals, all of whom readily communicate their findings. This would amply account for the large number of sightings reported in the USA.

A thorough, systematic investigation in Australia, carried out under similar conditions, would undoubtedly lead to figures yielding proportionately the same results.

What are these objects and can we safely ignore their presence in our skies? The UFO Societies in Australia have one common ambition - to serve the truth. However amazing the phenomena which have been detected in our skies, they require a rational explanation. Blank scepticism and sustained negation have never helped to solve any problem, and that of the UFOs is one of the most momentous which mankind will have to solve.

At this point perhaps it may be opportune to present a brief history of the Victorian UFO Research Society.

The earliest UFO group to form in Australia was the "Australian Flying Saucer Bureau" under the direction of Edgar Jarrold and Andrew Tomas, in the early 1950s. At the same time, Fred Stone inaugurated the "Australian Flying Saucer Research Society" in Adelaide. After approximately two years the Bureau closed down and was regarded as a branch of the "Australian Flying Saucer Research Society" under Andrew Tomas. This shortly broke from Adelaide and became the "Australian UFO Investigation Centre" with Dr. Clifford at its head until 1958, when the Presidency passed to Dr. Lindtner.

The "Australian Flying Saucer Research Society (Victorian Branch)" was formed on the 17th February 1958 as a branch of the "Australian Flying Saucer Research Society" and later that year was re-organised as the "Victorian Flying Saucer Research Society" with Mr. Peter E. Norris L.L.B. as President. In 1968 the name was again altered - this time to the "Victorian U.F.O. Research Society". OVER:-

UFOs - THE WORLD WIDE ENIGMA

During this time, the Society has published various papers and magazines and at one stage sponsored and produced a quarter-hour program on a Melbourne radio station under the heading of "The Truth Behind Flying Saucers".

The Society has held a dispassionate attitude on UFOs, claiming it is a scientific problem deserving closer attention. It has also met regularly in General Meetings and maintains the largest UFO library in the Southern Hemisphere, making books available by post, to members throughout the Commonwealth.

Membership of this Society - which maintains the largest membership of any UFO organisation in the Southern Hemisphere - is open to all who are genuinely interested in the subject.

Attached are some of the more interesting "case histories" and UFO articles from the Society's magazines.

U.F.O.'s ARE 'ROUND · victorian UFO research society · P.O. Box 43, Moorabbin, 3189

Victorian U.F.O. Research Society

P.O. Box 43, Moorabbin, Vic. 3189, Australia

APPLICATION FOR MEMBERSHIP

I wish to join the Society and receive notices and publications.

NAME.....

ADDRESS.....

.....POST CODE.....

OCCUPATION.....AGE.....

Membership within Australia..... $5 (Aust.) Enclosed.

Membership outside Australia..... $7 (U.S.) Enclosed.

The Society welcomes reports of unusual Aerial Phenomena and evaluates each report on its own merits and if requested, reports will be held in the strictest confidence. The Society exchanges information with many similar Australian and overseas organisations, as well as scientists, and disseminates to the public, available information on the subject, which includes local, interstate and the latest overseas developments in its quarterly publication "Australian U.F.O. Bulletin", posted to all members.

the Skeptic $1

No 6. (Vol 2 No 3) October 1982

TWO DIVINING TESTS

Water at the divined depth and a diviner's own gold ingot both elude discovery

Dick Smith

I. Report on Water-Divining Test

After seeing a "teaser" on divining for the "Willesee Show," a popular television program in Sydney, Australia, Malcolm McDowell, a property owner in an outer suburb, decided to use the services of Vic Vaisey, one of the most experienced diviners in the area. (Vaisey was one of those who participated in the divining tests James Randi and I conducted in Sydney a week later for the Willesee program.)

Knowing my involvement with the Sydney tests, McDowell rang me up to ask if I would like to follow the proceedings. I enthusiastically agreed, since most of the diviners we had tested (including Vaisey) said they earned their living from divining and had never had a failure. We had heard a lot of anecdotal evidence, but this was an opportunity to follow such a claim from start to finish. The test was conducted in September 1980.

McDowell desperately needed additional water for his stock and for irrigating his five-acre parcel of land. He had previously written to the New South Wales Water Resources Commission, who then requested a map of his property. The Commission advised him in writing that water might be found at a minimum depth of 15 meters (50 feet), most probably at 60 meters (200 feet), and at a maximum depth of 100 meters (330 feet). No one from the Commission visited McDowell's property.

Vaisey went to McDowell's farm and spent about an hour applying his divining rod. He was not told about the Commission report. He divined two "definite" streams—one running east-west at a depth of 35 feet and another running north-south 5 feet deeper. (It should be noted that the dowser thus gave himself two chances of success in one spot.) He marked this location (within a few inches of where "the two streams" crossed).

Vaisey was quite definite that, since he had always had 100 percent accuracy, water would be found at this location and at the specified depth. He charged McDowell $100 for his service. (The Water Resources Commission had charged nothing.) He suggested that McDowell drill to 35 feet and, if the flow from that stream was not sufficient, that he press on the extra 5 feet to tap the next stream.

INSIDE

Survey Results 3

The Aborigine & the Astronaut 4

Members' Work Published 7

Paranormal Australia 8

Letters 10

A Dream? 11

Bay Area Skeptics 12

Book Review 15

ABORIGINES AND UFOS P. 4

Registered by Australia Post Publication No VB84757 Category B

The drilling rig arrived on the site soon afterward. Because of a tree stump near the divined location, the rig was positioned to drill about six inches away from Vaisey's marker. I had suggested to McDowell that he make sure the hole was drilled exactly on the marked position; many diviners had claimed that their only failures were when the drill hole was not made in the exact spot recommended, causing the bore to miss the stream by a few inches! Therefore McDowell insisted that the rig be moved around the stump in order to drill the hole in the exact location. The drill operators were amused by this request.

The drill quickly went down to the 35-foot and 40-foot levels, and farther, only to find hard, dry shale to over 80 feet. Water was eventually struck at 210 feet at 130 gallons an hour. An increased flow of 250 gallons an hour was struck at 220 feet. Further drilling to a depth of 253 feet produced no extra flow.

These results were entirely consistent with the Water Resources Commission predictions, even though they had not visited the property. McDowell then contacted Vaisey, who could offer no explanation for his failure. He said it was the first time he had ever failed. McDowell hinted that his $100 should be refunded, but Vaisey made no offer.

II. Report on Metal-Divining Tests

Following the dowsing tests that James Randi and I had made in Sydney, there had been an outcry from diviners in Perth. They claimed they could easily divine metal hidden in a box with 100 percent accuracy.

A well-known Perth radio station, 6WF, decided to do a series of tests of diviners and then send the most successful one to Sydney to claim the $40,000 I had offered for a successful demonstration.

On September 5, 1980, twenty-five of Western Australia's diviners performed in Perth in front of a large public audience and television cameras. All of them said they could easily perform under the stated conditions (cardboard boxes laid out on the ground, with one containing a piece of metal). All said they would complete an agreed number of tests.

The protocol could hardly be called good, nor could the test conditions be called scientific. However, the results were predictable. Even though a number of the diviners stopped short of the required number of tests when they found they were failing, the average score was 18 percent—the result from chance alone would have been 20 percent.

The diviners gave various reasons for failing, from an alleged huge aluminum deposit under the ground to the jewelry worn by onlookers.

The diviner with the highest success rate for the day, Cecil Holmes, of Gosnells, a Perth suburb, was flown to Sydney by the radio station for testing by me.

Holmes arrived at my home with his wife on the morning of Saturday, September 13. He immediately produced a small gold ingot, dropped it on the ground, and enthusiastically showed how he could divine it. When I pointed out that, since he knew where the gold was, it was not a good demonstration of divining, he laughed and said that it didn't make any difference because it was the gold pulling the rods, not his knowledge of the gold's location. Like most believers in divining, Holmes and his wife were obviously sincere.

After I explained the test conditions (a row of ten boxes, with the gold ingot hidden under one of them), Holmes said he would easily be able to obtain at least 80 percent accuracy. I asked Mrs. Holmes to be the chief judge. The other two judges were Trevor Munnery, a reporter from the newspaper *Truth*, and Garry Crapp, a business associate of mine.

Before the test started, an unusual situation occurred. As is traditional in such tests, in full view of Holmes I placed the gold ingot in a box and asked him to see if his powers were working. Instead of going directly to the chosen box (as we expected him to), he walked up and down the row of

Are You Curious

About Claims of Paranormal Phenomena...

such as the UFOs, psychic surgery, water divining, clairvoyants, astrology, iridology, transcendental meditation, levitation, creation/evolution debates, parapsychology, biorhythms, Yowies, the Horvath water-powered car, and the like? If so, these and other similar topics are waiting for you to explore in ...

the Skeptic

For a fast-growing number of discerning Australians, "The Skeptic" is a welcome breath of fresh air, separating fact from myth in the flood of occultism and pseudo-science on the scene today - the only Australian publication devoted to critical evaluation of claims of the paranormal.

This dynamic magazine published by the Australian Skeptics, the Australian section of the International Committee for the Scientific Investigation of the Claims of the Paranormal, offers you the unique opportunity to find out what the scientific community knows about claims of the paranormal, as opposed to the sensationalism often presented by the press, television, and movies.

In its short history, "The Skeptic" has crerated a storm of controversy. Why? Because it is bold enough to investigate carefully the extraordinary claims of true believers and charlatans of the paranormal world. Its findings are sometimes humourous, often sobering, always fascinating.

We invite you to subscribe to the quarterly magazine, "The Skeptic", on the form underneath,or purchase a sample back issue.

To Australian Skeptics,
Box 1555P,
GPO Melbourne 3001

Please send me the Skeptic for 1983. - $7 for the four issues.
Please send me a sample issue for $1.
Please send me a set of 1982 issues for $6.

Name.....

Address.....Postcode.....

Cheque/Money Order/Cash enclosed.

Supplement to "The Skeptic No 6, October 1982.

AUSTRALIAN SKEPTICS

AUSTRALIAN SECTION OF THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL.

...About The Committee

The more serious-minded among us are starting to ask what is going on. Why the sudden explosion of interest, even among some otherwise sensible people, in all sorts of paranormal "happenings"? Are we in retreat from the scientific ideas of rationality, dispassionate examination of evidence and sober experiment that have made modern civilization what it is?

In the past, the raising and answering of such questions has been left to commentators and journalists. This time around, however, some scientists are beginning to fight back. They have set up an organization—the Committee for the Scientific Investigation of Claims of the Paranormal—to investigate unusual phenomena.

Among the Fellows of The Committee

Paul Kurtz, Chairman (professor of philosophy, SUNY at Buffalo)
Kendrick Frazier, (science writer, Editor, *The Skeptical Inquirer*)
Lee Nisbet, Executive Director (professor of philosophy, Medaille College)

George Abell (professor of astronomy, UCLA)
James E. Alcock (professor of psychology, York U., Toronto)
Isaac Azimov (science writer)
Irving Biederman (professor of psychology, SUNY at Buffalo)
Brand Blanshard (professor of philosophy, Yale)
Bart J. Bok (prof. emer., astronomy, Univ. of Arizona)
Bette Chambers (Executive Director, American Humanist Assoc.)
Milbourne Christopher (magician, author)
L. Sprague de Camp (science writer, engineer)
Eric J. Dingwall (parapsychologist, author)
Bernard Dixon (European Editor, *Omni*)
Paul Edwards (Editor, *Encyclopedia of Philosophy*)
Charles Fair (science writer)
Antony Flew (professor of philosophy, Reading U., England)
Yves Galifret (Exec. Secy., l'Union Rationaliste)
Martin Gardner (science writer)
Stephen Jay Gould (Museum of Comparative Zoology, Harvard U.)
C. E. M. Hansel (psychologist, Univ. of Wales)
Sidney Hook (professor emeritus, philosophy, NYU)
Richard Hull (assoc. prof. of philosophy, SUNY at Buffalo)
Ray Hyman (professor of psychology, Univ. of Oregon)
Leon Jaroff (Managing Editor, *Discover*)
Lawrence Jerome (science writer, engineer)
Philip J. Klass (science writer, engineer)
Marvin Kohl (professor of philosophy, SUNY at Fredonia)
Lawrence Kusche (science writer)
Paul MacCready (scientist/engineer, AeroVironment, Inc.)
Ernest Nagel (prof. emer., philosophy, Columbia)
James Oberg (science writer)
James Prescott (psychologist, HEW)
W. V. Quine (professor of philosophy, Harvard)
James Randi (magician, author)
Carl Sagan (professor of astronomy, Cornell)
Evry Schatman (President, French Physics Association)
Robert Sheaffer (science writer)
B. F. Skinner (professor of psychology, Harvard)
Marvin Zelen (statistician, Harvard)
Marvin Zimmerman (professor of philosophy, SUNY at Buffalo)

Affiliations given for identification only.

the Skeptic

G.P.O. BOX 1555 P
MELBOURNE
AUSTRALIA 3001.

boxes showing us that he received no reading from the empty boxes. He then mistook the correct box to be the one next to it and promptly divined the wrong box. His wife called out to him to "remember which box it was put in," but to no avail. After this bad start, we went ahead with eleven different tests. At the conclusion of the tests, he was asked how he thought he had fared. "At least 80 percent, probably higher," he said. His wife then announced the results—one hit in eleven tries—which were entirely consistent with chance.

In spite of his failure, Holmes then gave a demonstration of another of his powers—that of divining a two-dollar bill. He showed us that, if he held a one-dollar bill and approached a two-dollar bill lying on the ground, the divining rods would not move, but that they would if he held a two-dollar bill. He was amazed to find that this power would not work when we covered the two-dollar bill on the ground with a piece of paper. He had not bothered to try such a test before because he had not thought it necessary.

At the conclusion of the tests, Holmes said he thought they had been extremely fair and could not explain why his powers had not worked.

SURVEY RESULTS

With Issue No 3 we sent out a Survey to all subscribers . Fifty-four were returned.

We found a few volunteers for committees and assisting in the production of "the Skeptic".

We only had one person suggest he write an article but we hope others will come forward with articles to help fill "the Skeptic".

When asked to nominate subjects the readers would most like to see, the greatest number of requests were for anti-evolution, fringe medicine, astrology, meditation and chiropractic. Next most popular were biofeedback, clairvoyance, ESP, cults, mediums, near death experience, supernatural beliefs, biorhythms, water divining, telepathy and ghosts.

There was also interest in acupuncture, exorcism, faith healing, Horvath car, psychic powers, spiritualism, von Daniken and the Valentich disappearance.

It was noticeable that requests were often related to professional interests with doctors wanting articles on fringe medicine, air traffic controllers and pilots showing interest in UFOs and behavioral scientists keen on ESP, clairvoyance and near death experience.

This survey will help the editors in preparing "the Skeptic".

Unfortunately few people indicated a willingness to research topics.

The open-ended section asking for comments generally brought favourable responses except for a few who thought we had the wrong editorial bias.

These latter comments included: "perhaps there should be less skepticism and more enquiry", "a prejudiced outlook should be guarded against at all costs", and "I would like to see creative attempts at analysing the phenomena rather than an over-cynical preconceived blanket judgment - I am rather wary of skeptics being inflicted by dogma in a similar vein to atheists".

However such comments were outnumbered by the many favourable expressions.

The survey has given your editors an idea of what the readers want. However we always welcome additional comments and suggestions.

THE ABORIGINE AND THE ASTRONAUT

by Ian Bryce

In the November-December 1981 issue of "UFO Research Australia" Newsletter, the major article is titled "Some Suggestive Examples of Prehistoric Interactions between the Aborigines of Australia and Extra-Terrestrial Intelligence (ETI)".

According to the author, John Prytz, this paper (which expands a previous paper) "*serves to reinforce my basic premise that enough information exists to suggest that at some time in the past, there could have been some degree of interaction, maybe major, maybe minor, between the Australian Aborigine and 'Ancient Astronauts'*". The author adopts a low-key approach, reflecting the strength of his material, and admitting his ideas are suggestions, possibilities and speculations.

The author begins by suggesting that if contact between early man and ETI occurred, Australia has been in a favourable position to preserve the evidence. There has existed a continuous social and cultural link from early times, lacking contact with other races, wars or social upheaval.

The author ignores the aborigines' lack of the ability to preserve records. Other races represented their history in writing, painting, buildings, stone constructions, metal and ceramic artifacts and so on.

As oral traditions are the only cultural record the author has to support his claims, he tries to convince us of their high degree of accuracy. He emphasises that the aborigines are not children or savages but are humans with the same potential abilities as ourselves. The legends were so important that every detail and name should be preserved exactly. Their rock carvings of animals are easily recognisable.

I am afraid I remain unconvinced that the legends remained unchanged when retold to 400 new generations. The aborigines say the events in the legends occurred in the "dreamtime"!

The evidence for UFO intervention is presented in five categories as follows.

ORIGINS

How the aborigines came to be in Australia is unknown, the author explains, but skeletal measurements and other biological factors show distinct differences from neighbouring races. The author continues:

"But the aboriginal is not the only distinct race which once roamed Australia. Aboriginal myths, backed up by the discovery of 40 skeletons in northern Victoria, are highly suggestive that Homo Erectus, in the more popular guise of "Java Man", lived in Australia ... side by side with modern type aboriginals" until 10,000 years ago, and then vanished.

The origin of the Asian and Australian fossils has been studied by many scientists.

The position of the early Java fossils seems clear. They belong to the species Homo Erectus, whose progress can be traced from Africa through southern Europe to Asia about one to two million years ago. The most recent examples are 500,000 years old.

All more modern fossils, including the Neanderthals, belong to the present species, Homo Sapiens. The 40 "robust" Kow Swamp skeletons, dated 9,000 to 15,000 years, possess facial features reminiscent of Homo Erectus, it is true, but metrical analysis of skull dimensions shows them to be much closer to the modern "gracile" aborigines than to Erectus. Ancient genetic influence may cause

such variations. Such investigations are reported in detail in "The Origin of the Australians", symposium papers of the Australian Institute of Aboriginal Studies.

The author appears to have studied only the daily press. For him to indulge in such conjecture and use it in support of ancient astronauts, is an insult to archaeology.

Prytz's other evidence for his claim comes from aboriginal myths and legends. He quotes at length from two articles in the "Australian" by reporter Graham Williams. In the first, Roland Robinson describes legends of a hairy, ape-like creature, "with a low forehead, long spindly legs and hardly any neck". These myths are widespread and consistent in detail in southern NSW and Victoria.

So far so good. But what else does Robinson find convincing in the myths? "They relate their versions of actual events or universal truths - the story of the Flood ... and the Resurrection ..." And then he describes mythology containing knowledge in "psychology, extra-sensory perception and telepathy".

It is stupid, Robinson said, for scientists to scoff at mythology. "In Australia we have similar myths which have been proven by scientific fact. The aboriginal dreamtime myths tell of a time when Central Australia was lush and fertile and covered with huge trees ... and giant creatures. The myth accurately describes the Permian period."

Amazing indeed Mr Robinson. The Permian period ended 200 million years ago but man did not arrive until 197 million years later!

The original newspaper article gives us some background on this Mr Robinson. He has been a horse-breaker, ballet dancer, opera singer, jockey, fettler, swaggie and station hand, and is now "one of Australia's authorities on Aboriginal legends". I wish him an early success in his next career.

John Prytz next describes the discovery of a skeleton which is particularly tall for an aboriginal (1.89m or 6ft 2 1/2in), was buried in an unusual posture, and with a necklace of 180 Tasmanian Devil teeth. The teeth were each from a different Devil, and 2,000 years older than the aboriginal. The author reaches various conclusions and speculations, but I feel the explanation lies in archaeology rather than ETI. An astronaut with a tooth necklace, indeed!

REMAINS (Archaeological)

The author describes a stone arrangement covering 400 hectares in the Simpson desert. It was "constructed probably up to 10,000 years ago", whatever that means. The punchline is:

"Such a size of course immediately suggests that total comprehension or meaning, the 'Big Picture', would only be visible from the air ...".

This brings back visions of Van Daniken gibbering as the BBC camera revealed that his "spacecraft parking bays" in Peru were simply the knee-joints of a large bird outline.

ISOLATION

The Australian continent and its people were physically and culturally isolated for 10,000 years, it is believed. The author asks us to explain various cross-cultural tid-bits:

* Some aboriginal rock carvings in Queensland resemble Egyptian hieroglyphics. A museum curator has suggested that Australia was visited by ancient Egyptians.
* A member of the Aboriginal Art Board was struck by the "uncanny stylistic similarities between the work of the first Australians and the first Americans". This includes the use of sand in paintings, dance rhythms, and geometric designs in paintings.
* Some face engravings found in Siberia are "almost identical" to some in the Cleland Hills (north-west of Alice Springs).

While examining books on aboriginal art, I found a surprising variety of abstract forms. Hairlines can be rendered as layered, dotted, or out-standing;



Fig 1



Fig 2

some faces show distinct expressions. Human forms can be realistic, or weirdly distorted, or of cubistic Picasso form. Areas are often grained, lined or cross-hatched.

It is evident that early races were highly imaginative in their art, and many resemblances can be expected by coincidence if one searches long enough.

* The final tid-bit in this section is a rock painting in which the figures' heads have a dotted outline (Figure 1). Nine pages of Prytz's article are headed with a reduced version of this as a logo. Although not mentioned in the text, it is obvious that this material has been included to suggest that the head-dresses represent space helmets.

In considering other explanations I noticed a similarity to a Pitjandjara tribesman with painted stripes (Figure 2). Alternatively, the bark painting of a turtle by the Gunwinggu tribe (part shown in Figure 3) has a similar dotted outline. Would ufologists also suggest that this is an extra-terrestrial turtle?

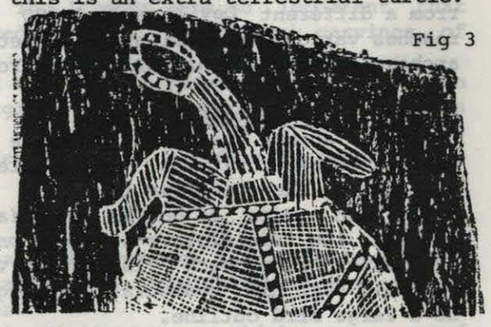


Fig 3

ART WORKS

The one and a half pages of this section deal with rock paintings and engravings discovered in Central Australia by an expedition sponsored by "The Australian" newspaper. The expedition was headed by Mr Robert Edwards, curator of anthropology at the South Australian Museum, and was reported in "The Australian" in six parts during 14-22 April 1970.

The findings of the Edwards expedition are described at length. There are circles, small human figures, and serpents. One find has a "complete bodily outline, its legs spread slightly ... a small mouth ... hornlike protusions ... an engraved cross". Prytz suggests the cross is related to christianity, or perhaps King Arthur of Camelot.

Then the expedition found faces "without parallel in ancient Australian art ... with heart-shaped faces, hooked noses ... horns ... and with laughter and sadness".

Finally some general comments by Edwards are quoted. "... there are all the signs of a break in time between the aborigine and the men who created this art. It is as though primitive people recorded their rough beliefs and crude religion as a sort of bible in the rocks - then suddenly stopped living, and then another man came and adopted the art as sacred and, holding it in awe, began to build his own ritual and ceremony around the sites."

The situation may seem strange, but does it sound like the actions of Mr Prytz's astronauts?

ORAL TRADITIONS

This section contains two items which Prytz claims are quite suggestive. Firstly he quotes from a 1975 newspaper article which quotes from a 1878 book which reports some conversations with aborigines. When asked "Is the earth round like this ball or square like this box?", two girls replied "Round like a ball". Some choice.

Secondly, the terrifying spirit man kadaitcha is described. He produces glowing stones from his body. He kills, resurrects, and then slowly kills his victim again for no apparent reason. In more modern times a .22 rifle is employed.

What is it that this suggests to you, Mr Prytz? Are these the actions of an extra-terrestrial?

CONCLUSION

Another piece of evidence appears in the final section. Two popular television travellers described rock engravings as showing figures wearing breathing apparatus, and claimed: "Experts who have examined these engravings, say they were done 10,000 years ago, probably by aborigines who had seen the arrival of creatures from another planet."

Want to find out who these experts are? Then you will have to ask the Leyland Brothers!

Finally Prytz concludes "... there is very little need to relate as to how, sometimes by a stretch of the imagination, the above material could be related to "Ancient Astronauts".

I am afraid I cannot see any connection.

But at least the method of reasoning of such "Ufologists" is laid bare. The desired subject is closely examined at the level of the daily press and the self-styled expert. Any little coincidence, peculiarity or as yet unexplained item is immediately construed as evidence for the intervention of extra-terrestrials.

Such Ufologists do not bother to develop a consistent theory and test it against the facts, as in legitimate enquiry. They abandon their reason in their overpowering will to believe.

MEMBERS WORK PUBLISHED

Four of our members have recently had work published or broadcast.

Committee member Dr Allan Christophers had an article published in the April issue of the New Zealand Medical Journal titled: "Butyl mercaptan poisoning in the Parnell Civil Defence emergency: fact or fiction?".

After the 1973 Civil Defence emergency at Parnell the New Zealand Government appointed a Commission of Enquiry. The Commission decided that the symptoms experienced by people in Parnell were due to poisoning by butyl mercaptan leaking from drums stored locally.

Allan disputes this view and in his article suggests a diagnosis of mass hysteria. Incidents of mass hysteria have often been given a paranormal explanation. Readers may remember Allan's article on the subject of mass hysteria in "the Skeptic" No 1.

Erica Heftmann, once a member of the Unification Church or "Moonies" but now a skeptic has just had her book "The Dark Side of the Moonies" published by Penguin Australia.

Most of her book is an exciting first-hand account of her recruitment into, and life in the "Moonies", and her kidnapping and de-programming from the cult.

Dr Peter Morton had an article on ESP published in "Omega". Peter submitted it to us simultaneously and we have printed the full article.

Australian Skeptics Secretary James Gerrand had his review of Max Charlesworth's booklet "Science, Non-Science & Pseudo-Science" broadcast by ABC Radio on 6 May in their Science Book Review session. This review is published in this issue.

Perhaps if you have your work published you might like to send us a copy for our library and possible review in this magazine.



PARANORMAL AUSTRALIA

Paranormal Australia is a regular feature of "the Skeptic". We rely on readers forwarding us newspaper cuttings from throughout Australia on paranormal topics. Limited space enables the publication of only a few extracts from the many cuttings sent. However all cuttings go into our resource library and may form the basis of later research. Please keep an eye out for suitable cuttings and forward them to our P.O. Box 1555P, G.P.O. Melbourne. 3001.

GHOST WEARS STRIPED BIKINI

Di Klose was visited by a beautiful ghost, wearing a striped bikini, who:-
* caused household objects to vanish;
* blew up the family car;
* created a putrid smell in the house;
* kept exploding the swimming pool filter.

However the ghost has turned friendly and now even gives Di tips when she is playing cards.

(Adelaide Advertiser, 10 July 1982)
(SUN, 10 July 1982)
(Truth 20 July 1982)
(Pix-People, 24 July 1982)

DECODING DOCTOR

Sydney's Dr Lionel Jay claims to have isolated the embodiment in nature of divine purpose.

This required breakthroughs in the detailed knowledge of the physical constants of matter, of the precise dimensions of the planetary orbits and of the histories of the biblical scriptures.

Dr Jay's project links man's oldest and newest spheres of investigation - group theory, a sophisticated branch of mathematics and the ancient art of divining the innate character of religious writings through mathematical decoding.

(The Australian, 27 July 1982)

GIGO

Astrology teacher Clair Burnett uses a TRS 80 computer to work out the birth-charts and horoscopes of her students at Brighton (Vic) Recreation Centre.

Clair says the computer is a boon to astrologers as it dispenses with pages of mathematical calculations needed to calculate positions of the sun, stars, moon and planets.

Clair stated that a lot of potential astrology students are deterred from learning astrology when they had to work with so much mathematics.

(Southern Cross, 24 February 1982)

UFO HUNT

Noel Martin of Wollongong has given up his job to search for a UFO he saw sink off the coast in 1957.

Noel was only seven at the time but can remember the fiery ball passing over his head before it crashed.

Noel has set up a company, UFO Discovery '82, and hopes to raise $200,000 so he can start the salvage operations in November.

(SUN, 26 July 1982)



A SPIRITED THERAPY

Ernie Zeydel, tutor in occupational therapy at Queensland University, has just invented a device called a Magneton which he claims can spirit away toothache, ear ache, sinus trouble, arthritis, rheumatism, migraine, stomach ache, mild epilepsy and asthma.

The Magneton allegedly works by sending electro-magnetic waves to the affected area of the body, supposedly restoring the energy balance in the body to allow the body to cure itself.

Ernie claims by holding the Magneton on his body for a few minutes he can increase his energy so much that two strong men are unable to lift him. Ernie also claims to be able to draw energy from trees by wrapping his arms around them.

(Post, 26 August 1982)

FLOATING A LOAN DOME

Dennis Dickson advertised for investors for his floating geodesic domes in Brisbane in July and received many replies.

Dennis stated that he envisaged geodesic spheres about 800m in diameter which could float in the air. When the sun shines on such a dome the temperature of the air inside rises and the dome will float in the air.

At night huge plastic curtains would be dropped over the domes to slow down the cooling and keep them aloft over night.

The spheres could be tethered to mountains, driven round the world or connected to the earth by flexible highways.

(Sunday Mail, 1 August 1982)

CURSE OF THE CHEVIOT

Four of six skindivers who touched the wreck of the steamer "Cheviot" off Portsea (Vic) have died. The dead skindivers include Prime Minister Harold Holt. The other two have survived brushes with death.

All six were unaware the wreck contained twenty-eight bodies when they touched the wreck.

(Sunday Mail, 8 August 1982)

TELEPATHY

John Pinkney states "Many scientists now believe that telepathy is an ability we are all born with, whatever our race. Westerners lose the gift when, as children, they start reading, watching television and clutter their minds with less efficient forms of communication."

(Pix-People, 17 August 1982)

LETTERS



SKEPTICISM IN THE CLASSROOM
What Skeptics Are Up Against

by Peter Hogan

When Uri Geller was in Australia a few years ago I was taking a group of year 10 boys for Science. One of the boys, Tony, was claiming that he could read people's minds. He claimed that if you drew a geometric shape on a piece of paper and concentrated on it, he could tell what shape you were thinking of. I was invited to a demonstration during the lunch-break one day. It soon became obvious that he was using an accomplice to tell him what was on the paper.

As there was a fair amount of interest in Uri Geller,and because some of the boys were being taken in by Tony ,I decided to talk to them about the paranormal and the importance of taking a skeptical attitude to such things.Using Eysenck's *Sense And Nonsense In Psychology*,which has a chapter on Telepathy and Clairvoyance,I gave examples of people claiming to have ESP who had been exposed by careful investigation.We talked about the importance of keeping an open mind when confronted with such phenomena and the possibility of other explanations.

I decided that, with Tony's help,I would demonstrate what I was talking about and also check whether my talk had been effective.The morning before the next Science class I asked Tony if he would give a demonstration to the class.He agreed and I gave him a piece of paper with the symbols that I would use.Later in the classroom Tony was sent out of the room while I showed the boys the symbols I would transmit to him.When he came back into the room we went through his act a couple of times.Most of the boys were impressed and delighted with Tony's "success".

I then asked them how many believed that Tony was telepathic.To my dismay about two-thirds of the class put there hand up.I asked them if they could think of any other explanation for Tony's success.A couple of boys suggested that he may have just been lucky as there was only a few geometric shapes to choose from.No other explanations were forthcoming and no-one suggested trickery.I then asked Tony to stand up and show his piece of paper with the shapes on it.There was laughter and I think some relief.A few boys then remembered that I had spoken to Tony that morning.

I was dismayed and disappointed that so many of the class were taken in.Perhaps it is a tribute to the trust that students have in teachers,but it did not say much for my previous lesson on skepticism.It is obviously going to be difficult getting our message across.

PS. It may be asked whether I abused the trust of the boys by doing the demonstration with Tony.I think it was justified because:

(1) I was making an important point for there benefit.

(2) I did not gain anything myself.

I think the students appreciated this and I was not aware of any change in our relationship arising from the demonstration.

Dear Sir,

I would be very interested to hear from any reader who has any proper scientific evidence of the efficacy (or otherwise) of negative ion generators.

I was recently told by an acquaintance that when a negative ion generator was turned on in his son's bedroom at night, his son's morning hay fever, from which he had been suffering from years, was not present the following morning.

To my great surprise, my acquaintance agreed to conduct a scientific test of his claim (of which, incidentally, he and his son were thoroughly convinced). The simple test procedure was for the ion generator to be some nights switched, some nights off, but hidden from the son, who the following morning would write down his own opinion of whether the machine had been switched on or off (depending on whether his hay fever was present or absent).

The test was conducted for 20 nights, at which time I analysed the results and found that the son was correct in his statement of whether the machine was switched on or off on eight occasions and wrong on 12 occasions (of course pure chance would have made him right on an average of ten occasions).

When presented with this evidence the son was easily convinced that the machine was useless. However the father was much harder to convince! He eventually conceded that perhaps the machine had no physical effect on hay fever, but "if it has a psychological benefit, it is still worth using".

In summary, my simple experiment could not prove any physical benefit of the negative ion generator in this particular case. I'd be very interested to hear other skeptics' experiences.

Trevor Sauer
Queensland

A PRECOGNITIVE DREAM?

In the Lowe by-election a columnist noted electors had the chance to vote for a candidate who is trying to prove the truth of premonitions. Fred Martin, of Broken Hill, will stand as an Independent and wear a special election uniform of a track suit, with red stripes to represent Britain and a blue stripe to represent the United States.

Mr Martin claimed he had a dream that he won the election and was standing beside a white car and people were congratulating him. Just a couple of days after the dream, Sir Billy McMahon resigned in Lowe. While on holidays Mr Martin saw the white car and bought it. Mr Martin planned to drive his car from Broken Hill to Burwood to meet his future constituents.

The final figures showed Mr Martin had amassed 49 votes, 0.08% of total formal votes cast.

(S.M.H., 11/2/82, p.15)

IMITATION IS THE SINCEREST FORM OF FLATTERY

The newest local chapter of the Committee for the Scientific Investigation of Claims of the Paranormal has been formed in San Francisco.

As the title "San Francisco Chapter of the Committee for the Scientific Investigation of Claims of the Paranormal" is a bit of a mouthful, they decided to call themselves the "Bay Area Skeptics". Now where would they have got the inspiration for a brilliant title like that?

We reproduce, overleaf, an article on our fellow Skeptics.

San Francisco Chronicle Thurs., July 22, 1982

The Skeptics Who Debunk Pseudo-Science

BY MICHAEL ROBERTSON

No doubt about it, the founding party of the Bay Area Skeptics at Bob Steiner's El Cerrito apartment is a big success.

The Shroud of Turin, precognition, UFOs, psychic surgery, creationism, psycho-kinesis, laetrile, mental telepathy, palm reading, Kirlian auras, astrology, the Bermuda Triangle and William Shatner's hairline — the 35 people assembled here tonight are festooning these problematic notions with question marks the way some people put tinsel on a Christmas tree.

Though the talk is good, around 11 p.m. the card tricks and hand magic begin. Psychologist Terry Sandbek does a couple. UFO researcher Robert Sheaffer does a couple. Host Steiner does a couple dozen.

These are quick, clever deceptions, and the skeptics love them all. It is play with a purpose, catch me-if-you-can. The skeptics don't know how it's done, but they know they're being tricked. And that, not ironically, is what they love most of all.

■

Bay Area Skeptics is an idea searching for a final shape. The group is actually the local chapter of the Committee for the Scientific Investigation of the Claims of the Paranormal. But the Bay Area Skeptics would like to take an even broader approach.

The question is how broad?

Shall they simply "tell," providing volunteer teachers for schools and other interested groups? Or shall they also "show," tackling fake psychics one-on-one?

Dr. Wallace Sampson, one of the group's six directors, prefers they concentrate on teaching.

But, he says, "I am in favor of debunking newsworthy cases. There may be no other way except to investigate and expose. We hear a great deal about psychic healers and psychics finding missing persons. But we don't hear about skeptics challenging these claims. If people know an organization can dispel claims, they may be less likely to accept them."

("Have Doubts Will Travel," their cards might say. "Wire Skeptics, San Francisco.")

Board member Robert Sheaffer, author of "The UFO Verdict: Examining the Evidence," is particularly irritated by what he considers to be the media's ready acceptance of outrageous claims. He hopes the group will serve as a resource for confused newspeople — if only they will ask.

"Look at all the positive stories about the Shroud of Turin," he says. "There is an irresponsible element in the press that reaches for sensationalism. A story on UFOs is treated as if it were filler."

When Sheaffer was young, he says he believed in flying saucers, encouraged by the popular press. But after doing serious reading and research, "I modified my views. I felt I had been had. Why isn't someone contradicting so much misinformation? It's like a natural force, like erosion. If no one opposes it, it'll win by default."

Though they enjoy an occasional card trick, the Bay Area Skeptics are serious people. Sampson is a hematologist and oncologist with a practice in Mountain View. He is on the clinical medical faculty of the Stanford University Medical Center and teaches classes on medical fraud there and elsewhere.

His fellow board members are also respectably credentialed. Sandbek is a clinical psychologist in private practice near Sacramento specializing in anorexia and bulimia. Sheaffer is a science writer and programmer of highly specialized computer software.

Lawrence Jerome is a writer, college instructor and consultant trained as an engineer. Andy Fraknoi is executive officer of the Astronomical Society of the Pacific and former newspaper astronomy columnist.

Steiner, the catalyst for the group's formation, is a CPA and part-time professional psychic debunker.

Though a majority of the group's members are scientists of one sort or another, they insist their views are not monolithic. Sandbek, for example, is an evangelical Christian. Steiner is a militant atheist.

The group might legitimately criticize the teaching of creationism in public schools because, as Sampson puts it, in that situation you have "religion claiming to be a science. But prayer in the schools — I think that's out of bounds for the organization."

Sampson is personally uncomfortable with the term "skeptic" because it suggests that members of the group would prefer not to believe in anything.

Sandbek agrees that the "word is loaded ... I would love to see psychic phenomena proved true. Like Carl Sagan, I would like definite proof we've been visited (from outer space). My job is to prove such things do exist. But I haven't found that proof yet."

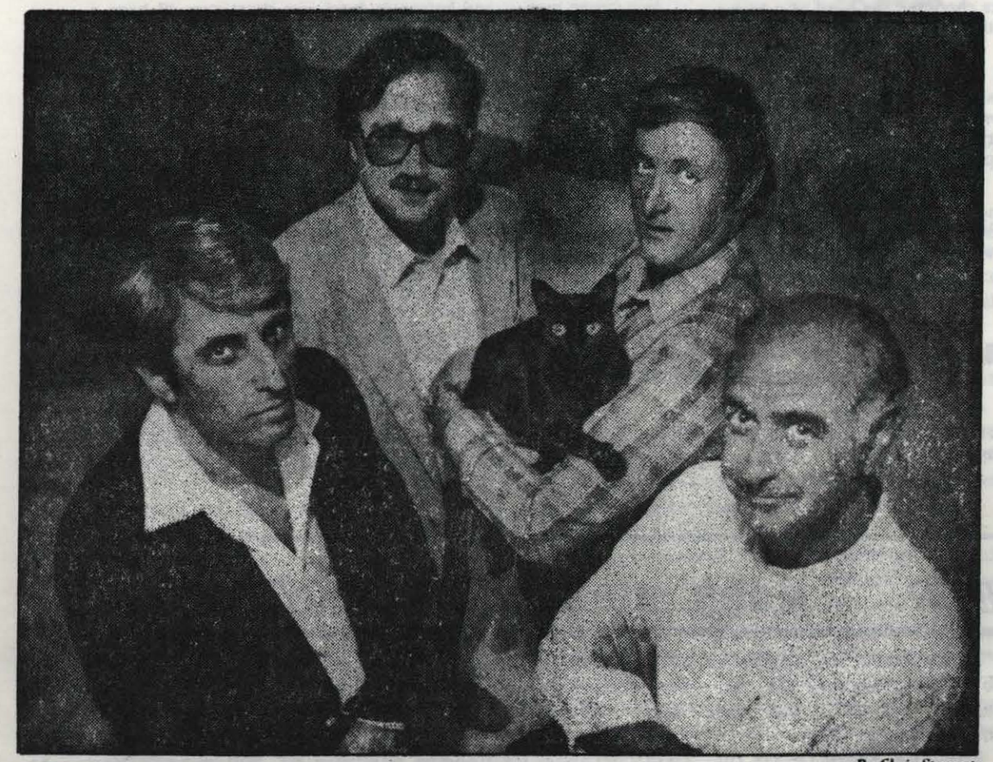
Sheaffer uses the UFO controversy to illustrate what he believes is the crucial difference between healthy skepticism and uncritical belief.

"We can be proved wrong, but they can't. One UFO in Golden Gate Park for one hour, and we're proved wrong before the whole world. But no matter how many cases skeptics refute, (believers) say they just weren't the right ones."

Members of the group agree there are real dangers in not demanding compelling proof for pseudo-scientific phenomena. Law enforcement officers can waste time and energy listening to psychic crime-solvers.

Passivity is encouraged when UFO believers wait for God-like aliens to intervene and clean up the world's mess. The seriously ill can be diverted from traditional medicine until it is too late by psychic healers and by medical "discoveries" like laetrile.

"The willingness to think critically is a matter of courage, which most people don't have. To have that courage . . .," Patterson pauses, "... sometimes I believe you almost have to betray your parents to learn how to think critically."



By Chris Stewart

Bay Area Skeptics Bob Steiner, Robert Sheaffer, Kali, Lawrence Jerome and Wallace Sampson

Their cards might read 'Have Doubts Will Travel'

It is 1 in the morning, and almost everyone has left. Steiner's houseguest, Jack Patterson, professor of engineering at Iowa State University, rests in an armchair. He is a somber, impressively quiet man.

In an indirect way, he is responsible for the birth of the group. In the '70s, during a public battle with a fellow Iowa State faculty member who was offering academic courses in which all sorts of psychic claims were treated as fact, he met Steiner. That was the real beginning of Steiner's career as a debunker.

Some of the skeptics are almost exuberant in their doubt. Patterson is not.

Humanity's problem is gullibility, not lack of intelligence, he thinks.

Skepticism is useful tool in evaluating virtually anything, including skepticism itself.

The Bay Area Skeptics do have a critic, or at least a friend who fears they may go too far.

Psychologist Ray Hyman was at the organization's founding party not as a member but as a guest, a highly respected one. He is about to begin his sabbatical from the University of Oregon, where he has taught since 1961.

During the next academic year Hyman, a specialist in the science of thinking, will be the Thomas Welton Stanford visiting professor at Stanford University.

Thomas Welton was Senator Leland Stanford's youngest brother, who went to Australia as a young man and never left it. A believer in spiritualism, in 1912 he gave $50,000 to the university to establish a "psychical research fellowship."

Hyman, who has spent over 30 years testing psychic claims, is not in complete sympathy with the Bay Area Skeptics and their goals.

Long-term education of the public is a good idea, but he doubts the value of headline grabbing by confronting bogus psychics. "It's

like chopping the head of a hydra. A thousand more grow."

He also fears a possible conflict of interest because Bob Steiner makes part of his living as a professional debunker. (Steiner says he earns comparatively little in that capacity.)

Some skeptics, Hyman thinks, tend to "think they are holier than thou. They think (those who believe) are gullible or stupid.

"In one sense (the skeptics) are dogmatic, just like the other side. They know science. They think they can't be fooled. I think they can be taken."

As a young man — and before he began graduate study at Johns Hopkins University from which he received his Ph.D. in experimental psychology — Hyman read palms. He was a professional entertainer, and it was part of his act. But he gradually became convinced he had a genuine gift. This self-deception frequently happens among would-be psychics, he says.

He discovered the truth about his talents when a friend advised he tell people the exact opposite of what their palms "said." To his surprise, his subjects still lavishly praised his accuracy.

Drawing on his own experience, Hyman sees certain hazards in hard-core skepticism. "I have a background in magic. I know I can be fooled, that (I may see a new trick) and have no answer whatsoever, at least for a while. I might be confronted by a legitimate psychic, and think that it was only a new trick."

Hyman agrees that abuses like medical fraud must be exposed. But a defense can be made, he thinks, of those psychics who confine their ministrations to the spirit.

Psychic readers, Hyman says, can do good. "People come away better able to deal with their problems. They become aware of new insights and new possibilities. The fallacy, of course, is that it's the psychic reader. A computer could do the job just as well. It all comes from within."

HELP – MORE SUBSCRIBERS WANTED!

At present we have 159 subscribers. We print 500 copies of each issue: 159 go to subscribers, 15 to overseas sections of CSICOP, 25 to the media, 8 to libraries (free) and the rest are kept to meet future orders from new subscribers.

For the Skeptic to be fully viable we need a minimum of 200 subscribers. At present we are surviving by donations which we would rather use to build up a resource library and to cover research costs.

Included in this issue is a recruiting leaflet. We ask that you give it to someone who you feel may be interested in subscribing. If you think you can distribute more leaflets, write and let us know how many you could distribute and where you could distribute them.

The other way you can help recruit new subscribers is by writing an article about us for any journal that might publish it. Our New South Wales Chairman, Barry Williams, wrote an article for the September issue of "Laboratory News" which attracted additional subscribers. We can help you write the article.

If we do not increase the number of subscribers we will be forced to reduce our free list and print run or increase subscriptions.

If you are not already a SUBSCRIBER to "the Skeptic", why delay?

$6 will bring you the four issues of 1982. Simply photostat this form or otherwise send your name and address to:-

GPO Box 1555P,
Melbourne Vic 3001

Name ----------

Address ---------- Postcode -------

BOOK REVIEW



SCIENCE, NON-SCIENCE & PSEUDO-SCIENCE by Max Charlesworth, ABC Science Show Lectures, published by Deakin University Press. $3.95 booklet.

These lectures were commissioned by Robyn Williams for his ABC "Science Show". He states in his preface that the lectures were to "give us a 'Noddy's Guide' to philosophers of science...I had found that students, teachers and laypeople; let's be frank: most scientists too, knew next to nothing of the history and philosophy of science."

A good understanding of science and its method in the community would make us all skeptics and avoid the need to have a special organisation to query the claims of the astrologers, the clairvoyants, the diviners, et cetera. More importantly, if we all made our everyday decisions through a scientific evaluation of the facts then our future would be better. Indeed such is the probabilty of World War 3 that unless we scientifically examine the causes that are leading us into Armageddon we do not look like having a future.

Unfortunately Max Charlesworth, as a believer in religion rather than science, is not the person to provide this needed understanding of science. Bertrand Russell, in his introduction to his "History of Western Philosophy" maps out the relative domains of science, philosophy and theology as follows: "philosophy is something intermediate between science and theology. Like theology, it consists of speculations on matters to which definite knowledge has, so far, been unascertainable; but like science, it appeals to human reason rather than authority...All definite knowledge - so I would contend - belongs to science; all dogma as to what surpasses definite knowledge belongs to theology. ... there is a No Man's Land, exposed to attack from both sides, this is...philosophy."

If you accept that science is the realm of definite knowledge - Chalesworth does not, he calls it an "imperial" claim and labels it "scientism" - then this explains why scientists and other pragmatists do not see value in a philosophy of science which does not provide some use, some knowledge.

The central belief of science is that knowledge or truth, the understanding by which we make decisions for our future, is found by observing facts, inventing hypotheses to fit the facts and testing out the hypotheses against further facts. When a hypothesis is found to fit all known facts then the hypothesis can be regarded as true. Nowhere in Charlesworth's lectures is this fundamental concept, scientific truth, expressed. Just as the militarists of the middle ages required the development of the scientific laws of motion to foretell where their cannon balls would land so in our modern life we require scientists to foretell where our decisions - individual, company or governmental - will land us. If the forecasts are wrong, the science is bad and needs correction.

Charlesworth considers five philosophies of science - those of Bacon, Popper, Lakatos, Kuhn and Feyerabend - and ends by confessing he cannot define science nor its method (yet he says he can recognise science though he does not say how!).

Charlesworth lists five "grave difficulties or problems" with the Baconian prescription for scientific method. The first is that a scientist's collection of facts is prejudged, it is "theory-laden". This is a philosophic objection, not a practical problem. Probably the most important factor in the success of a scientist is his skill in selecting the relevant facts. I recall my science master's dictum - "treasure your exceptions" - as a valuable precept for scientific success. I understand Australian Nobel prize winner, Sir Macfarlane Burnet, had an outstanding capacity for seizing upon such discrepancies. The test whether all relevant facts have been covered is whether the scientific law

is found to be true in its application. If it is found to be not true for some facts then the law has to be amended.

Charlesworth queries the justification for using induction. The scientist replies it works, that is the justification for all science. If the inductive hypothesis is found not to apply to new facts in more general areas, then again the hypothesis needs revision. Again taking Sir Macfarlane Burnet as example, he was particularly quick in changing a working hypothesis and inventive in thinking up a new one, often to the consternation of his team still regarding the facts from the old stance.

Next Charlesworth raises another philosophic objection - induction will never yield the generalisations, the theories from the laws. The practical scientist is not particularly concerned how he arrives at a general theory, the main feature if that such are produced, probably by an inductive/deductive process, and their validity established by seeing if the theory conforms with all known facts and can be tested against possible facts.

Charlesworth complains that Bacon neglects the important part that mathematics can play in science. Scientists would say that whilst the logical deductions of mathematics are often essential in the expression and logical testing of scientific truth, yet there are some areas where mathematics is minimal, if used at all. For example, Darwin's Theory of Natural Selection owes little to mathematics.

Finally Charlesworth objects to the assumptions of Baconian science that Nature is knowable and worth knowing, and that Nature operates in a regular or uniform way, and not capriciously. The short pragmatic reply from the scientist is that these assumptions are valid because if they were not, science would not work, could not be used to guide our future.

In his treatment of the four post-Baconian philosophers of science. Charlesworth does not provide any major different approach to the Baconian method that would be helpful to modern-day scientists. (It is claimed the latter represent 90% of all scientists that have ever lived, such is the explosive growth of science.) Popper's concept of imagining tests to prove the falsity of a scientific theory can be handy in differentiating between the natural and the supernatural but is not earth-shattering. Popper is dangerous to science in the West, as Lysenko was to science in the USSR, when he endeavours to associate his scientific approach with politics.

Lakatos endeavoured to make Popper's approach more philosophically acceptable but ends up with not so much a scientific method as setting down modern aims in science research programmes. Kuhn's approach is that science method has evolved from Aristotle's time but Charlesworth admits that the medieval time of the religious Reformation also saw a revolution in science.

Finally Feyerabend sets the cat among the philosophic pigeons by proclaiming there is no scientific method. It is here that Charlesworth comes closest in his treatment to giving us a glimpse of the "wood" of science, its basis, yet quickly tells us to avert our gaze because what Feyerabend (and believers in science) call science is "scientism", it is an ideology and should not be accepted as providing the truth. Yes science is an ideology, a belief system, but with a difference: its truth is continually being tested by the truthfulness or otherwise of its predictions.

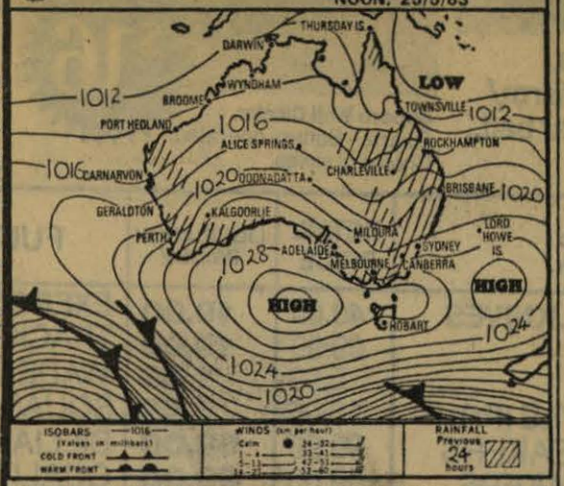
With such diverse conclusions from philosophers since Bacon's time is it any wonder that scientists do not see much to gain from studying them.

- James Gerrand

"the Skeptic" is published by The Australian Skeptics, the Australian section of the international Committee for the Scientific Investigation of Claims of the Paranormal.
Address: The Australian Skeptics, Box 1555P GPO, Melbourne 3001.
Subscription for 1982 (four issues) is $6. Back issues, Nos 1 & 3, may be purchased for $1 each.

WEATHER

BUREAU OF METEOROLOGY — MELBOURNE, WEDNESDAY, NOON, 25/5/83



Isolated drizzle was reported from southern and mountain districts of Victoria yesterday and there were local morning fogs over the eastern ranges. The highest fall recorded in the 6 hours to 3 pm was 3 mm at both Colac and Mt Hotham. Wind yesterday was generally an east to southeasterly and fresh at times along the coast. Temperatures varied between 13 and 18 at most centres, with the highest of 19 recorded at both Echuca and Eildon. In contrast, a high of only 4 was recorded at Mt Hotham. Melbourne's temperature ranged from a low of 11.9 degrees at 6.30 am to a high of 17.3 at 12.40 pm. Cloud associated with an upper-level trough covers northern Victoria and New South Wales. A strong and slow-moving high centred south of the Bight is directing an east to southeasterly airstream over Victoria. The upper-level trough will move slowly eastwards. The high will remain the dominant influence on the weather over Victoria and continue to be slow moving.

FORECASTS FOR TODAY

VICTORIA: Early drizzle about the coast and ranges, otherwise fine. Cool with light to moderate south-east to easterly wind, fresh at times offshore, and slight to moderate sea.

CENTRAL DISTRICT: Fine and cool with a south-east to easterly breeze. Outlook Friday: Partly cloudy but mainly fine. Cool to mild.

PORT PHILIP AND WESTERNPORT BAYS: South-east to easterly wind grading from 10 knots in the north to 15/20 knots in the south. Slight sea grading southward to rather rough.

MELBOURNE: Fine. Early cloud, then a cool, sunny day with a south-easterly breeze. Outlook Friday: Partly cloudy but mainly fine. Cool to mild.

CAPITAL CITY FORECASTS

Brisbane: Few showers, 23.
Sydney: Showery, 19.
Canberra: Periods of rain, 14.
Hobart: Fine, 13.
Adelaide: Fine, 17.
Perth: Fine, 24.
Darwin: Fine, 31.

CAPITAL CITY TEMPERATURES

	Max.	Min.
Melbourne	17	12
Brisbane	22	16
Sydney	18	15
Canberra	15	10
Hobart	13	3
Darwin	30	21
Adelaide	16	9
Perth	22	14

MELBOURNE OBSERVATIONS

	Barometer mb	Dry Bulb deg.	Wet Bulb deg.	Rel Hty PC
3 am	1025.2	13.2	12.6	92
6 am	1024.9	12.3	11.5	90
9 am	1026.4	13.0	11.7	85
Noon	1026.0	16.5	12.9	63
3 pm	1024.4	16.3	12.8	58
6 pm	1025.4	14.0	11.2	69
9 pm	1026.6	12.0	9.6	72

THE TIDES

TODAY

PORT PHILLIP HEADS — High Water: 12 am, 11.49 pm. Low Water: 4.54 am, 5.42 pm.
WILLIAMSTOWN — High Water: 1.37 am, 3.12 pm. Low Water: 8.42 am, 9.05 pm.
TOORADIN — High Water: 11.17 am, 1.23 pm. Low Water: 6.17 am, 7.05 pm.

TOMORROW

PORT PHILLIP HEADS — High Water: — am, 12.50 pm. Low Water: 5.46 am, 6.35 pm.
WILLIAMSTOWN — High Water: 2.25 am, 4.09 pm. Low Water: 9.29 am, 9.56 pm.
TOORADIN — High Water: 1.12 am, 2.13 pm. Low Water: 7.09 am, 7.58 pm.

SUN, MOON & PLANETS

TODAY

	Rises	Sets
SUN	7.22 am	5.12 pm
MOON	4.59 pm	6.24 am
MERCURY	5.48 am	4.29 pm
VENUS	10.48 am	8.12 pm
MARS	7.35 am	5.19 pm
JUPITER	5.10 pm	7.39 am
SATURN	3.28 pm	4.30 am

TOMORROW

	Rises	Sets
SUN	7.22 am	5.12 pm
MOON	5.36 pm	7.28 am
MERCURY	5.45 am	4.26 pm
VENUS	10.48 am	8.13 pm
MARS	7.34 am	5.18 pm
JUPITER	5.06 pm	7.35 am
SATURN	3.24 pm	4.26 am

MAIL TIMES

BY SEA

BRITAIN: Encounter Bay, AOs, 5 pm, L, 11.30 pm, 1 June.
AMERICA: Col Victoria, AOs, 5 pm, L, 11.30 pm, 29 May.
NEW ZEALAND: Union Rotoiti, AOs, 5 pm, L, 11.30 pm, 31 May.

WORLD WEATHER

Temperatures around the world yesterday were:

		Min.	Max.
Amsterdam	rain	8	15
Athens	clear	16	27
Auckland	fine	6	15
Bahrain	clear	28	37
Bangkok	clear	29	37
Beirut	clear	22	27
Berlin	rain	11	16
Brussels	rain	9	18
Christchurch	fine	4	10
Copenhagen	cloudy	11	16
Dublin	cloudy	8	13

MOSLEM PRAYER TIMES

Prayer times for today the 13th day of Shaban are 6.05 and 7.22 am and 12.27, 2.55, 5.12 and 6.29 pm.

AGE 26 May

EPA LEVELS

Carbon monoxide	1.5
Ozone	0.5
Nitric oxide	4.1
Nitrogen dioxide	3.0
Total oxides of nitrogen	7.1
Airborne particle index	0.7
Sulphur dioxide instr. malfunction	
Pollution index.	1.3
Summary	clean air

SHIPPING MOVEMENTS

Due today

BRISBANE TRADER, 3 Webb Dock, ANL.
AUSTRALIAN ESCORT, 5 Webb Dock, ANL.
STRAITSMAN, 14 South Wharf, Tasmanian Transport Commission.
MARAMA, 6 Victoria Dock, Union Bulkships.
TASMAN HARVEST, 8 Appleton Dock, Wilhelmsens.
ZINCMASTER, 1 Yarraville, Union Bulkships.
COLUMBUS CALIFORNIA, 1 East Swanson Dock, Columbus Overseas.

Sailing today

BRISBANE TRADER, 3 Webb Dock, ANL.
TOYOFUJI No. 8, 4 Webb Dock, ANL.
STRAITSMAN, 14 South Wharf, Tasmanian Transport Commission.
MARAMA, 6 Victoria Dock, Union Bulkships.
UNITED ENTERPRISE, 22 Victoria Dock, Heth Wesfarmers.
ZINCMASTER, 1 Yarraville, Union Bulkships.
ESSO GIPPSLAND, Holden Dock, Esso Australia.
IRON CURTIS, Outer West Station Pier, BHP.
POZNAN, D Appleton Dock, Sleigh.
COLUMBUS CALIFORNIA, 1 East Swanson Dock, Columbus Overseas.
ACT 6, 3 East Swanson Dock, ACTA.
KANGOUROU, 1 West Swanson Dock, OCAL.
ARAFURA, 2 West Swanson Dock, OCAL.

Due tomorrow

EMPRESS OF AUSTRALIA, 1 Webb Dock, ANL.
SYDNEY TRADER, 3 Webb Dock, ANL.
RIP, West Wing Station Pier, Ports & Harbors.
MATTHEW FLINDERS, Inner East Station Pier, Ports & Harbors.
ZUIJIN, Outer East Station Pier, Dalgety.
TARAGO, 8 Appleton Dock, Wilhelmsens.
SEA ARROW, 4 Victoria Dock, Heth Wesfarmers.
SEAWAY PRINCE, 6 Victoria Dock, Union Bulkships.
POTOI ISLAND, 3 East Swanson Dock, Heth Wesfarmers.
ZIM EILAT, East Swanson Dock, Globe Star.

Sailing tomorrow

EMPRESS OF AUSTRALIA, 1 Webb Dock, ANL.
SYDNEY TRADER, 3 Webb Dock, ANL.
ZUIJIN, Outer East Station Pier, Dalgety.
PYOTR MASHEROV, 0 Appleton Dock, Opal.
SKULPTOR ZALKALNS, 0 Appleton Dock, Opal.
TASMAN HARVEST, 8 Appleton Dock, Wilhelmsens.
UNION LYTTLETON, 5 Victoria Dock, Union Bulkships.
CAPITAINE WALLIS, 30 South Wharf, Trans Austral.

MAY 26TH 1983

BENDIGO
Fine: Top 19.
Fine and mostly sunny with a southeast to easterly breeze.

MELBOURNE
Fine. Top 18.
Fine after early cloud. Then a cool, sunny day with south wind.

VICTORIA
Early drizzle about the cost and ranges, otherwise fine. Cool with light to moderate SE to east wind, fresh at times offshore.

YESTERDAY
Bendigo's weather yesterday was cool and mild with a top temperature of 16 after an overnight low of 12.2.

Other readings: Dry bulb 15.8; wet 12.2; wind, SE at two knots; barometer, 1087.7 and rising; humidity, 63 per cent.











THE COURIER, Ballarat, Wednesday, May 25, 1983 Page 7

More UFO sightings

More sightings of UFOs over Bendigo were reported last night, but police and the local radio station said they were probably hoax calls.

A spokesman for Bendigo's commercial radio station 3BO said they had half a dozen calls at about 7.30 pm from people saying there were lights in the sky.

"We're a bit sceptical though because the sky was heavily overcast at the time and the calls came just after a news bulletin on TV about the UFOs," said the spokesman.

Bendigo police were also sceptical about a woman caller from the Bendigo suburb of Long Gully who claimed she saw red lights in the sky north-west of Bendigo.

She said she saw a big cigar-like object which appeared to be stationary, then another small object appeared on the right of it.

But police said they looked out the window and could not see anything unusual in the sky.

Details of these latest reported sightings are likely to be added to the long list being investigated by an RAAF intelligence officer, Flight Lt. Bret Biddington, who has been sent to look into the sightings in Bendigo and Ballarat.

One of the first theories suggested to explain the cone and doughnut-shaped UFOs was that a rock group's laser beam lights was being shone into the sky.

Then the Weather Bureau suggested it could be the result of freak weather conditions that often give rise to strange lights in the sky.

SUN 26 MAY 83.

UFO lights over the City

VICTORIA'S UFO epidemic spread to Melbourne last night, with dozens of reported sightings in the City's southern sky.

People from many southern and eastern suburbs phoned The Sun, describing the UFO in similar terms—a series of lights which flashed different colors.

The RAAF command operations centre also had many calls and similar descriptions.

Duty Officer Flight Lt. John Lutton said most callers told of a strange light, flickering through colors such as red, green and white.

Flight-Lt. Lutton said all the callers were sure the lights weren't stars.

Mr Robert Cathery, of Hampton Park, told The Sun he saw the lights close to the horizon about 11 p.m.

"I went out to take the dog for a walk and I saw what I thought was this really bright star. It was red and green and yellow and white," he said.

"And it moved . . . and moved really bloody quickly."

A Weather Bureau spokesman said such lights often could be explained by unusual atmospheric conditions.

UFO investigations

UFO sightings in central Victoria are being treated by the RAAF as "unusual aerial sightings," a RAAF investigating officer said yesterday. Flight Lieutenant Brett Biddington said the RAAF would investigate every reported sighting with healthy scepticism. Reports of UFO sightings have been made by hundreds of people in the past week in the Bendigo area. Generally, the UFOs have been described as being cones or cylindrical, spinning very fast and changing color.

THE COURIER, Ballarat, Thursday, May 26, 1983 Page 3

BALLARAT COURIER - 10 JUNE. '83.

UFO picture, by accident

The UFO Research Society believes a photo unknowingly snapped by a professional photographer may give a better clue to the mysterious object seen over Bendigo three weeks ago.

Society spokesman Pat Gildea said the picture was taken during the day and showed a much better outline of the object than previous photographs.

He said the photographer, who wished to remain unnamed, was using up extra film by taking shots of the sky and did not know he had caught the object until he developed the film.

Mr Gildea said the photo showed the same cone shaped silvery grey object with a honeycomb pattern around the base emitting white light which many witnesses have described.

He said the society had examined the photo and agreed with the photographer that the object was not the result of a fault in the film or processing.

Mr Gildea said the society was very excited about the new photo and would get its own experts to compare it with the pictures taken by amateur photographer Mike Evans.

"We will then have both sets of negatives checked using sophisticated computer techniques available only in America," he said.

The interim report last week on the sightings by the RAAF's special investigator, Flight Lieutenant Brett Biddington, said the object remained a mystery but would be investigated further.

Amanda wins flying scholarship



This is Amanda Ryan, 23-year-old winner of this year's Ballarat Aero Club flying scholarship.

The announcement of the scholarship was the highlight of the club's annual Wings Dinner this week.

Amanda, who is a geology student at the Ballarat CAE, hopes to have her pilot's licence by early next year.

Solar eclipse

A partial solar esclipse would occur over Victoria on Saturday, said the Science Museum.

For nearly two hours, from 2.35pm to 4.28pm, the moon would appear to move almost halfway across the sun's disc and block out a quarter of its light.

Museum spokesman, Dr Robin Hirst said the effect on available sunlight would be minimal.

But he warned people not to look directly at the sun because this can cause permanent eye damage.

DEPARTMENT OF SCIENCE AND TECHNOLOGY

CANBERRA A.C.T.

VISIBLE SATELLITE PASSES BULLETIN

FOR MONTH OF MAY 1983.

PREDICTIONS ARE PROVIDED FOR THE FOLLOWING HIGHLY LUMINOUS SATELLITES WHOSE PARAMETERS AS LISTED, ARE CORRECT AT PRESENT DATE.

SATELLITE NAME	DESIGNATION	CODE	MAG	PERIOD MINS	INCLINATION DEGREES	APOGEE KM	PERIGEE KM
SALYUT-7	1982 33 A	B	4	90.4	51.6	302.2	289.4
COSMOS 151	1967 027 B	C	4	94.0	56.1	479.3	463.8
COS-B ROCKET	1975 72 B	D	0	130.7	89.2	3982.2	329.5
OAO-A2 ROCKET	1968 110 B	E	4	99.8	35.0	791.9	706.6
COSMOS 185 ROCKET	1967 104 B	F	4	97.2	64.1	802.3	449.1
COSMOS 372 ROCKET	1970 86 B	I	0	100.4	74.1	797.0	762.9
OAO-A3 ROCKET	1972 65 B	J	4	99.1	35.0	755.8	679.1
EXPLORER 31 FRAGME	1965 98 C	P	4	119.9	79.8	2851.4	506.6
COSMOS 1116 ROCKET	1979 67 B	N	4	96.5	81.2	630.4	549.4
COSMOS 1089 ROCKET	1979 26 B	O	4	104.7	83.0	994.9	969.0
COSMOS 975 ROCKET	1978 004 B	R	4	96.9	81.2	651.2	571.8
COSMOS 1043 ROCKET	1978 094 B	S	3	96.5	81.2	637.0	551.8
ARYABHATA (INDIA)	1975 33 B	T	4	94.0	50.7	486.4	453.0
COSMOS 1013 ROCKET	1978 056 J	U	4	117.9	74.0	1694.8	1481.3
SEASAT	1978 064 A	V	4	100.5	108.0	783.9	780.3
COSMOS 1174	1980 30 A	Y	4	104.7	66.1	1580.7	384.2
FLTSATCOM 3 ROCKET	1980 4 B	Z	4	343.6	26.1	19546.7	205.0
COSMOS 893	1977 011 A	AA	4	95.1	73.9	751.1	294.4

NOTES

1. THESE PREDICTIONS ARE COMPUTED FROM INFORMATION SUPPLIED BY GODDARD SPACE FLIGHT CENTRE OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION U.S.A. (CAUTION. DATA EMPLOYED ARE ONE OR TWO WEEKS OLD BY THE DATE FOR WHICH PREDICTIONS ARE MADE. THEREFORE PREDICTED TIMES OF PASSES ARE UNRELIABLE IF ORBITAL HEIGHTS HAVE BEEN ALTERED BY SATELLITE MANOEUVRES,AS WITH MANNED FLIGHTS.) ALSO SATELLITES IN LOW ORBIT MAY EXPERIENCE CHANGES IN ATMOSPHERIC DRAG WHICH COULD RESULT IN A SIGNIFICANT VARIATION BETWEEN THE ACTUAL AND PREDICTED PASSES.

2. THE SATELLITES SELECTED ARE LONG-LIVED AND OF OPTIMUM VISIBLE MAGNITUDE. OTHER BRIGHT OBJECTS SEEN COULD BE SHORT-LIVED SATELLITES OR ROCKET STAGES, EITHER RECENTLY LAUNCHED OR ELSE DECAYING OBJECTS RENDERED INCANDESCENT AS THEY RE-ENTER THE ATMOSPHERE. OTHERS AGAIN COULD BE METEORS.

3. A PASS IS INCLUDED IN THE PREDICTIONS WHEN -

   (A) THE SATELLITE IS ILLUMINATED BY THE SUN,
   (B) DURING THE PASS, THE SATELLITE RISES AT LEAST 10 DEGREES ABOVE THE HORIZON, AND
   (C) THE PASS OCCURS BEFORE CIVIL TWILIGHT FOR MORNING PASSES AND AFTER CIVIL TWILIGHT FOR EVENING PASSES.
   (D) NUMERALS IN BRACKETS AGAINST PREDICTED TIME INDICATE VISIBILITY ON A SCALE OF 0 TO 3. (3) INDICATES THAT THE SATELLITE SHOULD BE EASILY VISIBLE. (0) INDICATES THAT SOME DIFFICULTY MAY BE EXPERIENCED DEPENDING UPON VIEWING CIRCUMSTANCES.
   (E) A MINUS SIGN AFTER THE TIME INDICATES THAT THE SATELLITE IS NOT ILLUMINATED AT THE STATED TIME OF MAXIMUM ELEVATION BUT IS VISIBLE EARLIER. A PLUS SIGN INDICATES THAT VISIBILITY OCCURS ONLY AFTER THE STATED TIME OF MAXIMUM ELEVATION.

					AZIMUTH	ELEVATION	SAT. HEADING
19 MAY 83	J	042750(0)+	061215(0)		14 355	51 63	102 87
	P	051350(0)	175025(0)	195025(0)	102 111 256	22 49 19	172 10 10
	T	042915(0)+	060725(0)		155 315	22 65	63 50
	U	045650(0)			78	62	164
	Z	003720(0)+	205120(0)		323 2	37 62	81 104
	AA	041735(0)+	055405(0)		81 243	34 26	163 161
20 MAY 83	C	051920(0)			147	18	52
	D	010735(0)-	031705(0)-		92 257	60 54	355 355
	I	191905(0)			286	64	17
	J	051710(0)			1	64	92
	P	051315(0)	174950(0)	194935(0)	101 109 255	24 54 16	172 10 10
	T	053530(1)			312	79	51
	U	043200(0)	063230(0)		80 240	50 35	164 161
	Y	061005(0)			137	15	33
	Z	192240(0)			14	60	113
	AA	035935(0)+	053600(0)+		82 243	30 29	163 161
21 MAY 83	C	062600(1)			313	72	42
	D	010555(0)-	031520(0)-		92 256	62 53	355 355
	I	184515(0)	202645(0)		103 273	79 11	17 16
	J	042145(0)+	060635(0)		7 351	61 56	96 81
	P	051235(0)	174915(0)	194840(0)	100 105 254	26 59 14	172 10 10
	T	050335(1)+	064105(0)		146 308	86 10	52 44
	U	040710(0)	060720(0)		82 243	40 43	164 162
	Y	063740(0)			127	35	30
	Z	175025(0)	223915(0)-		25 344	54 58	122 90
	AA	051745(0)+			244	33	161
22 MAY 83	C	055450(1)			130	87	43
	D	010415(0)-	031335(0)-		92 256	63 53	355 355
	E	175150(0)			326	11	61
	I	181120(0)	195310(0)		110 277	48 18	18 16
	J	051110(0)			357	62	85
	P	051200(0)	174835(0)	194745(0)	98 103 252	28 66 11	172 10 11
	R	062210(0)			109	18	9
	T	043135(1)+	060910(0)		150 309	72 13	53 45
	U	034225(0)	054215(0)		85 245	31 53	164 162
	Z	230240(0)			289	37	99
23 MAY 83	C	052340(0)			131	68	44
	D	010235(0)-	031145(0)-		91 255	64 52	355 355
	I	191630(0)			280	30	17
	J	041540(0)+	060025(0)		358 342	65 44	89 75
	P	051125(0)	174750(1)		97 106	31 74	172 10
	R	063045(0)			186	31	8
	U	051740(0)	051710(0)		87 249	25 66	164 163
	Y	054415(0)			132	19	32
	Z	194640(0)			9	63	108
24 MAY 83	C	045225(0)+	062930(0)		136 301	52 14	45 38

PARAMETERS ARE FOR TIMES OF CLOSEST APPROACH IN CIVIL TIME (GMT +10 HRS 0 MINS).

ONLY VISIBLE PASSES ABOVE 10.0 DEG ELEVATION ARE SHOWN.
-,+ SIGNIFY NOT VISIBLE AT TIME OF CLOSEST APPROACH, BUT VISIBLE FOR SOME OF PASS BEFORE OR AFTER.

DATE	CODE	TIME OF CLOSEST APPROACH			AZIMUTH			ELEVATION			SAT. HEADING		
24 MAY 83	D	010050(0)-	031000(0)-		91	255		65	51		355	355	
	I	063305(0)	184545(0)		86	284		11	49		164	17	
	J	030505(0)	064930(0)		349	332		53	24		78	66	
	P	051050(0)	174710(1)		96	94		33	84		172	10	
	R	065120(0)			99			56			8		
	U	025300(0)	045210(1)		90	250		19	80		164	163	
	Y	061140(0)	194100(0)-		123	71		52	29		29	155	
	Z	203245(0)			1			64			102		
25 MAY 83	C	055825(0)			304			17			39		
	D	005905(0)-	030810(0)-	224405(0)-	91	254	111	67	50	21	355	355	355
	I	181155(0)			284			82			17		
	J	040940(0)+	055415(0)		354	337		60	31		82	69	
	P	051015(0)	174625(1)		95	291		35	86		172	10	
	U	022820(0)	042710(1)	062840(0)	92	70	232	14	84	21	164	163	159
	Y	065840(0)	200810(0)-		292	67		41	53		28	154	
	Z	194250(0)			8			64			107		
26 MAY 83	C	052715(0)+			305			22			39		
	D	005720(0)-	030620(0)-	224215(0)-	91	253	112	68	49	21	355	355	355
	I	173805(0)+	191945(0)		108	275		62	14		18	16	
	J	045835(0)+	064310(0)		341	327		40	14		73	62	
	P	050240(0)	174535(1)		94	273		38	76		172	10	
	R	054700(0)	194725(1)-		111	258		16	81		9	172	
	T	191640(0)-			47			28			133		
	U	040215(0)	060325(0)		76	235		69	26		163	160	
	Y	051815(0)	184750(0)	203525(1)-	130	73	233	26	19	89	31	156	152
	Z	181000(0)			21			59			119		
27 MAY 83	D	005535(0)-	030425(0)-	224030(0)-	91	253	111	69	48	22	355	355	355
	I	063320(0)	184605(0)		22	278		25	24		163	17	
	J	040330(0)+	054755(0)		348	331		49	20		76	65	
	P	050910(0)	174450(0)		97	277		40	66		172	10	
	R	055640(0)	200150(0)-		125	259		26	45		8	172	
	T	184440(0)			49			24			134		
	U	033725(0)	053805(0)		78	259		56	32		164	161	
	Y	051530(1)	191455(0)	210245(0)-	135	89	337	84	36	52	28	155	150
	Z	004420(0)-	232555(0)-		315	330		29	48		77	81	
28 MAY 83	B	190850(0)-			146			26			55		
	C	194035(1)-			45			75			138		
	D	005350(0)-	030230(0)-	223840(0)-	90	252	111	70	48	23	355	355	355
	I	055940(0)	181225(0)		85	282		15	38		164	17	
	J	045240(0)+			335			27			68		
	P	050035(0)	174400(0)		92	274		43	56		172	10	
	R	061110(0)	183840(0)	201625(0)-	103	89	254	46	26	26	8	172	171
	T	181235(0)	195020(0)-		48	214		20	52		134	125	
	U	051235(0)+	051255(0)		82	242		45	39		164	161	
	Y	061225(0)	175445(0)	194205(0) 213010(0)-	298	76	63 233	26	12	65 29	27	156	153 148
	Z	220710(0)-			343			60			88		

JUNE 1ST 1983

BENDIGO

Fine and cool. Top: 14.

Early fog clearing to fine cool day.

MELBOURNE

Cool and cloudy. Top: 15.

Morning drizzle clearing to a fine, cool, and cloudy day.

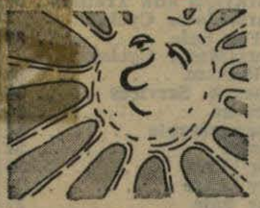
VICTORIA

Early fog clearing to a fine, cool day with a SW wind. Moderate seas.

YESTERDAY

Bendigo was fine and cool yesterday with a top of 12.7 after an overnight low of 4.9.

Other readings: Dry bulb 12.4; wet, 9.8; wind, west at 3 knots; barometer, 1022.7 and falling, humidity, 69 per cent.



Capital city temperatures: Melbourne 13, 10; Perth 25, 13; Darwin 28, 18; Adelaide 15, 11; Hobart 13, 8; Canberra 13, 1; Sydney 19, 9; Brisbane 20, 11.

May 30th 1985

BENDIGO

Cold with showers. Top: 11.

Cold with a few clearing showers. Gusty southwest wind.

MELBOURNE

Cold with rain. Top: 13.

Cold with occasional showers. Fresh southwest wind.

VICTORIA

Scattered showers mainly in southern and mountain districts. Light snowfalls above 1000 metres. Cold southwest wind reaching gale force offshore Gippsland. Rough to very rough sea.

WEEKEND

Yesterday **Bendigo's** weather was cold and wet with a top temperature of 9.2 after an overnight low of 6.7.

Other readings: Dry bulb 9; wet 8; wind NW at 3 knots; humidity 87 per cent, barometer 1000.1 and falling; rain 8.6 mm.



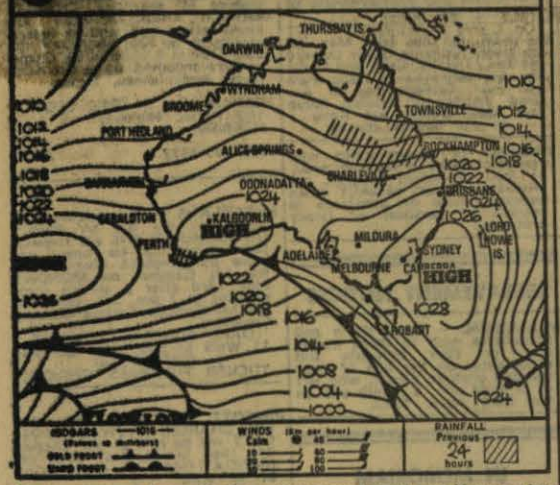
On Saturday **Bendigo's** weather was cool and fine with a top temperature of 13.4 after an overnight low of 9.4.

Other Saturday readings: Dry bulb 12; wet 10.6; wind NW at 6 knots; humidity 83 per cent; barometer 1008.1 and falling; rain 0.1 mm.

Capital city temperatures: Melbourne 12, 9; Perth 23, 9; Darwin 30, 21; Adelaide 16, 9; Hobart 11, 8; Canberra 12, 9; Sydney 21, 13; Brisbane 22, 13.

WEATHER

BUREAU OF METEOROLOGY MELBOURNE THURSDAY, NOON 19/5/83



The weather was fine yesterday with scattered cloud over Victoria after early fog patches in the south. The wind was light and variable in the east and a light to moderate northerly in the west. Maximum temperatures to 3 pm varied mainly between 16 and 19. The highest temperature reported was 22 at Mildura and Ouyen and the lowest was 6 at Mt Hotham. Melbourne's temperature rose from 7.4 at 7 am to a maximum of 18.6 at 2.05 pm. A large slow-moving high-pressure system is located over the Tasman sea. Another high is centred over Western Australia. A cold front to the west of Tasmania is weakening and moving steadily east-southeastwards. A disturbance in the upper atmosphere is producing a large area of cloud over Queensland and New South Wales. The weakening front will cross Victoria and the high over Western Australia will move towards the State.

FORECASTS FOR TODAY

VICTORIA: Fine north of the Divide although cloudy. Isolated showers and drizzle areas in the south contracting to the east during the day. Cool to mild with mainly light to moderate southerly wind. Slight sea.

CENTRAL DISTRICT: Cool with isolated showers and drizzle areas clearing during the day. Light to moderate southerly wind. Outlook tomorrow: Mostly fine. Cool to mild.

PORT PHILLIP AND WESTERNPORT BAYS: South to southwest wind of 10 to 15 knots. Slight to choppy sea.

MELBOURNE: Cool. Becoming fine after morning drizzle. Light to moderate southerly wind. Outlook: Expected top 18. Fine. Cool to mild.

THE TIDES

TODAY

Port Phillip Heads — high water: 5.11 am, 6.11 pm; low water: 10.57 am, 11.39 pm.

Williamstown — high water: 7.41 am, 9.11 pm; low water: 2.30 am, 2.19 pm.

Tooradin — high water: 6.34 am, 7.34 pm; low water: 12.17 am, 12.20 pm.

TOMORROW

Port Phillip Heads — high water: 6.15 am, 7.03 pm; low water: 11.44 am, — pm.

Williamstown — high water: 8.43 am, 10.00 pm; low water: 3.21 am, 3.12 pm.

Tooradin — high water: 7.38 am, 8.26 pm; low water: 1.02 am, 1.07 pm.

SUN, MOON & PLANETS

TODAY

	Rises	Sets
SUN	7.17 am	5.16 pm
MOON	1.55 pm	pm
MERCURY	6.20 am	4.51 pm
VENUS	10.46 am	8.04 pm
MARS	7.38 am	5.28 pm
JUPITER	5.37 pm	8.06 am
SATURN	3.52 pm	4.55 am

TOMORROW

	Rises	Sets
SUN	7.18 am	5.15 pm
MOON	2.27 pm	12.55 am
MERCURY	6.14 am	4.47 pm
VENUS	10.47 am	8.05 pm
MARS	7.37 am	5.27 pm
JUPITER	5.32 pm	8.02 am
SATURN	3.48 pm	4.51 am

WORLD WEATHER

Temperatures around the world yesterday were:

		Min.	Max.
Amsterdam	cloudy	13	17
Athens	cloudy	18	31
Auckland	rain	9	14
Bangkok	clear	30	33
Beirut	clear	18	25
Belgrade	clear	20	32
Cairo	clear	19	31
Chicago	cloudy	3	15
Copenhagen	clear	12	19
Denpasar	rain	25	31
Dublin	cloudy	9	15
Frankfurt	rain	9	22
Geneva	rain	7	18
Havana	clear	23	31
Helsinki	clear	7	17
Hong Kong	clear	23	27
Honolulu	clear	21	29
Jakarta	rain	25	31
Johannesburg	clear	2	11
Kuala Lumpur	rain	23	34
Lisbon	cloudy	10	17
London	rain	10	14
Mexico City	clear	19	32
Montreal	clear	1	12
Moscow	clear	15	21
New Delhi	clear	25	38
New York	clear	5	17
Nicosia	clear	14	27
Oslo	cloudy	9	13
Paris	rain	8	18

SHIPPING MOVEMENTS

Due today

EMPRESS OF AUSTRALIA, 1 Webb Dock, ANL.

SYDNEY TRADER, 3 Webb Dock, ANL.

STRAITSMAN, 14 South Wharf, Tasmanian Transport Commission.

WISTARIA PEARL, 28 South Wharf, McArthur Shipping.

PACIFIC ROAD, 29 South Wharf, McArthur Shipping.

SEAWAY PRINCESS, 6 Victoria Dock, Union Bulkships.

COLUMBUS AUSTRALIA, 1 East Swanson Dock, Columbus Overseas.

AUSTRALIA VENTURE, 3 East Swanson Dock, ACTA.

RIP, West Wing Station Pier, Ports and Harbors.

MATTHEW FLINDERS, Inner West Station Pier, Ports and Harbors.

Due tomorrow

GAZANA, 1 Maribyrnong, Beaufort.

ESSO GIPPSLAND, Holden Dock, Esso Australia.

SEA ARROW, berth to be advised, Heth, Wesfarmers.

ENCOUNTER BAY, berth to be advised, OCAL.

Sailing tomorrow

UNION ROTOITI, 5 Victoria Dock, Union Bulkships.

SEAWAY PRINCESS, 6 Victoria Dock, Union Bulkships.

AUSTRALIA STAR, 4 East Swanson Dock, ACTA.

COLUMBUS AUSTRALIA, berth to be announced, Columbus Overseas.

MOSLEM PRAYER TIMES

Prayer times for today the 7th day of Shaban are 5.01 and 7.17 am and 12.27, 2.57, 5.17 and 6.32 pm.

BENDIGO

Cool with some rain. Top: 15.

Cool and cloudy with occasional light rain and light wind.

MELBOURNE

Fine and cool. Top: 15.

Early fog patches. A fine cool and mostly cloudy day with light wind.

VICTORIA

Early morning fog patches. Cool and mostly cloudy. Patchy rain and drizzle mainly about the ranges. East to northeasterly wind, fresh to strong offshore. Moderate to rough sea.



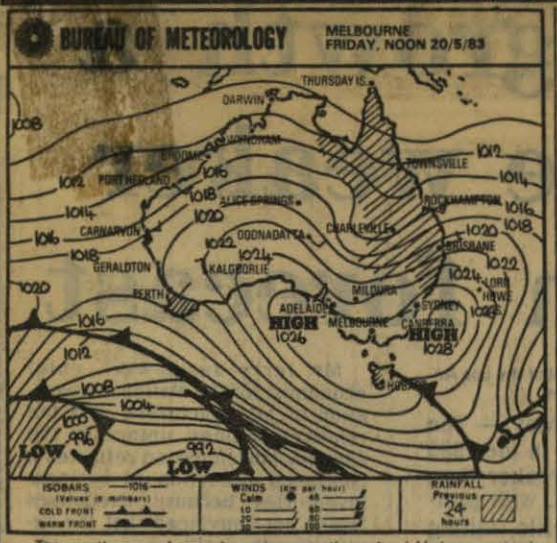
YESTERDAY

Yesterday **Bendigo's** weather was cool and fine with a top temperature of 15.4 after an overnight low of 9.8.

Other readings: Dry bulb 15.2, wet 12.5; wind NE at .04 knots; humidity 72 per cent; barometer 1022.7 and falling.

BENDIGO ADVERTISER
MAY 27TH, 1983

WEATHER



The weather was fine and mainly sunny throughout Victoria yesterday after morning fog and mist patches in the western half of the State.

The wind was light and variable and maximum temperatures varied mainly between 18 and 20 deg. The highest reported were 21 at Mildura, Ouyen and Benalla and the lowest were 13 at Rubicon and Ouyen.

Melbourne's temperature yesterday rose from 8.3 at 6.50 am to a maximum of 19.1 at 12.25 pm. A broad ridge of high pressure extended across most of southern Australia, with centres situated west of Tasmania and Adelaide and over the Tasman Sea. A low-pressure trough extends southward from Queensland to New South Wales. Cold fronts are over the southern Tasman and to the south-west of Western Australia.

The trough over the Queensland and New South Wales area is expected to move slowly eastwards, and thew cold front south-west of Western Australia will weaken as it moves towards the Bight region during today. Victoria will remain under the influence of a high pressure ridge, maintaining stable weather throughout the State.

CAPITAL CITY FORECASTS

Perth: Mostly fine, 22 deg.
Darwin: Fine, 32.
Hobart: Fine, 17.
Brisbane: Rain at times, 22.
Canberra: Fine, 17.
Adelaide: Fine, 21.
Sydney: Some showers, 18.

FORECASTS FOR TODAY

Age 21 MAY 83

VICTORIA: Fine and mainly sunny after morning mist and fog. Cool to mild with light wind later tending northerly. Smooth to slight sea.

CENTRAL DISTRICT: Morning mist and fog then a fine and mainly sunny day. Cool to mild with light wind later tending northerly. Outlook tomorrow: Fine and mild with a northerly wind.

PORT PHILLIP and WESTERNPORT BAYS: Variable wind of less than 10 knots tending northerly later in the day. Smooth to slight sea.

MELBOURNE: Fine, mild and mainly sunny after morning mist and fog patches. Light variable wind later tending northerly. Estimated top 19. Outlook: Fine and mild with a northerly wind.

MELBOURNE OBSERVATIONS

	Barometer mb	Dry Bulb deg.	Wet Bulb deg.	Rel Hty. PC.
3 am	1024.2	09.8	08.6	84
6 am	1024.6	09.8	08.5	83
9 am	1026.6	10.3	08.7	79
noon	1025.9	18.2	13.2	53
3 pm	1024.8	17.5	13.0	57
6 pm	1025.7	16.1	12.5	63
9 pm	1027.0	12.9	11.7	86

WORLD WEATHER

Temperatures around the world yesterday were:

	Min.	Max.
Amsterdam cloudy	15	19
Athens cloudy	17	30
Bahrain clear	27	33
Bangkok clear	30	36
Beirut clear	17	25
Belgrade clear	16	27
Berlin cloudy	8	19
Cairo clear	18	31
Denpasar rain	25	31
Dublin cloudy	8	15
Hong Kong clear	23	28
Honolulu clear	19	28
Jakarta rain	25	31
Kaula Lumpur rain	24	34
London cloudy	9	14
Madrid clear	3	19
Manila clear	24	37
Montreal clear	2	16
Moscow clear	17	29
New Delhi cloudy	21	35
New York cloudy	6	17
Paris rain	10	16
Peking cloudy	16	28
Rome clear	10	24
Singapore clear	26	32
Taipei cloudy	23	29
Tel Aviv cloudy	15	27
Tokyo clear	15	25
Wellington cloudy	5	11

MAIL TIMES

BY SEA

BRITAIN, Flinders Bay, (pcls and OA) 5 pm, (L) 11.30 pm, 1 June.

AMERICA, Col Victoria, (pcls and OA) 5 pm, (L) 11.30 pm, 30 May.

NEW ZEALAND, Marama, (pcls and OA) 5 pm, (L) 11.30 pm, 25 May.

EPA LEVELS

Carbon monixide	2.4
Ozone	0.7
Nitric oxide	2.6
Nitrigen dioxide	4.5
Total oxides of nitrogen	7.1
Airborne particle index	0.5
Sulphur dioxide	0.8
Pollution index	1.6

Summary: Clean air.

SUN, MOON & PLANETS

TODAY

	Rises	Sets
SUN	7.18 am	5.15 pm
MOON	2.27 pm	12.55 am
MERCURY	6.14 am	4.47 pm
VENUS	10.47 am	8.05 pm
MARS	7.37 am	5.27 pm
JUPITER	5.32 pm	6.02 am
SATURN	3.48 pm	4.52 am

TOMORROW

	Rises	Sets
SUN	7.18 am	5.15 pm
MOON	2.57 pm	2.03 am
MERCURY	6.08 am	4.43 pm
VENUS	10.47 am	8.06 pm
MARS	7.37 am	5.25 pm
JUPITER	5.28 pm	7.57 am
SATURN	3.44 pm	4.47 am

SHIPPING MOVEMENTS

Due today

BRISBANE TRADER, 3 Webb Dock, ANL.

GAZANA, 1 Maribyrnong, Beaufort.

ESSO GIPPSLAND, Holden Dock, Esso Australia.

AUSTRALIAN VENTURE, 3 East Swanson Dock, ACTA.

ENCOUNTER BAY, 3 West Swanson Dock, OCAL.

Sailing today

COLUMBUS AUSTRALIA, 1 East Swanson Dock, Columbus Overseas.

AUSTRALIA STAR, 4 East Swanson Dock, ACTA.

CONSOLIDATED VENTURE, E Appleton Dock, Patricks.

UNION ROTOITI, 5 Victoria Dock, Union Bulkships.

SEAWAY PRINCESS, 6 Victoria Dock, Union Bulkships.

Due tomorrow

SYDNEY TRADER, 3 Webb Dock, ANL.

ANRO AUSTRALIA, 5 Webb Dock, ANL.

UNION LYTTELTON, 5 Victoria Dock, Union Bulkships.

SKULPTOR ZALKALNS, berth to be advised, Opal Maritime Agencies.

Sailing tomorrow

BRISBANE TRADER, 2 Webb Dock, ANL.

RICH SEAGULL, 1 Maribyrnong, Stolt Nielsen.

ENCOUNTER BAY, 3 West Swanson Dock, OCAL.

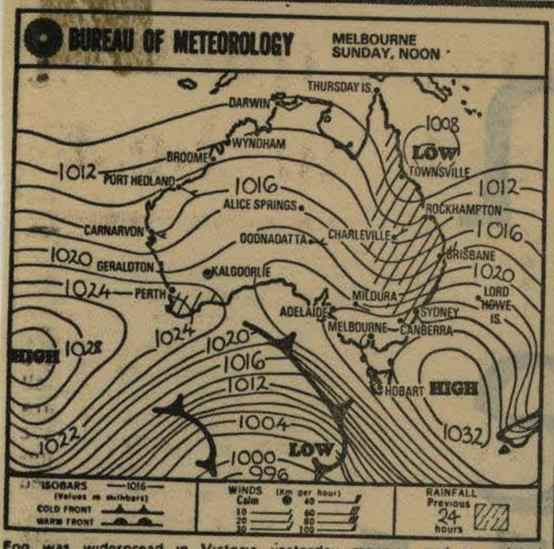
AUSTRALIAN VENTURE, 3 East Swanson Dock, ACTA.

CAPITAL CITY TEMPERATURES

	Max.	Min.
Brisbane	23	16
Sydney	18	11
Canberra	17	6
Hobart	12	7
Darwin	32	25
Adelaide	20	8
Perth	23	11

AGE 23 MAY

WEATHER



Fog was widespread in Victoria yesterday morning and in isolated localities it persisted for most of the day. Light rain fell in the north-east of the State. The highest total recorded was 1mm at Corryong. The wind was chiefly light and variable except along parts of the Gippsland coast where moderate to fresh east to northeasterlies were reported. A cloud mass associated with a low pressure trough over Queensland and New South Wales has gradually extended into Victoria during the day. Maximum temperatures generally varied between 15 and 19, the highest being 20 at Nhill in the Wimmera and Orbost in East Gippsland. The lowest maximum was 4 at Omeo in the northeast. In Melbourne the temperature ranged from 6.2 at 1.40 am to 17.5 at 1.15 pm. A cell of high pressure centred over the southern Tasman Sea extends a ridge across southern Victoria and into South Australia. A trough of low pressure over Queensland and New South Wales has been responsible for the rainfall in those States. A weak cold front is located over the Bight. The weak cold front is expected to affect southern Victoria by late today. The cloud mass associated with the low pressure trough should continue to move southward over Victoria.

FORECASTS FOR TODAY

VICTORIA: Early fog patches in southern districts. Areas of rain, chiefly north of the Divide. A cool to mild and cloudy day. North-easterly wind, fresh at times off Gippsland, tending southerly in western areas later.

CENTRAL DISTRICT: Early fog patches. A cool and cloudy day with patchy rain. Light wind tending north-easterly. Outlook Tomorrow: Cloudy. Patchy rain.

PORT PHILLIP BAY AND WESTERNPORT: Variable wind of less than 10 knots tending north-easterly at 10 knots during the day. Smooth to slight sea. Early fog patches.

MELBOURNE: Early fog patches. A cool and cloudy day with a little rain. Light wind tending north-easterly. Expected top 15. Outlook Cool. Cloudy. Periods of rain.

MOSLEM PRAYER

Prayer times for today the 10th day of Shaban are 6.03 and 7.19 am and 12.27, 2.56, 5.14 and 6.31 pm.

PARAGRAPH ...VERTISEMENTS

...T READINGS

...ing readings. ...of photos ... Ring ... ask

CAPITAL CITY FORECASTS

Adelaide: Fine; 18
Brisbane: Showers; 23
Canberra: Rain; 15
Darwin: Fine; 30
Hobart: Late Change; 16
Perth: Fine; 20
Sydney: Few Showers; 20

SHIPPING MOVEMENTS

Due today

ASIAN PEARL, 3 East Swanson Dock, Nedlloyd Swire.
EMPRESS OF AUSTRALIA, 1 Web Dock, ANL.

Sailing today

POZNAN, D Appleton Dock, HC Sleigh.
IRON CURTIS, Outer West Station Pier, BHP.

Due tomorrow

EMPRESS OF AUSTRALIA, 1 Webb Dock, ANL.
SYDNEY TRADER, 3 Webb Dock, ANL.
ANRO AUSTRALIA, 5 Webb Dock, ANL.
AUSTRALIAN VENTURE, 3 East Swanson Dock, ACTA.

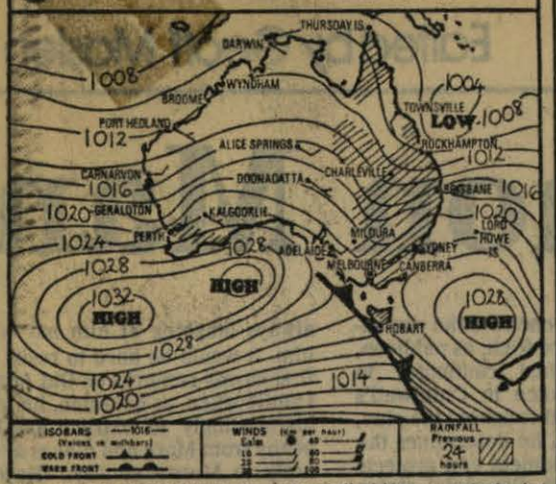
THE TIDES

TODAY

Port Phillip Heads — High Water: 8.34 am, 8.54 pm; Low Water: 1.20 am, 1.35 pm.
Williamstown — High Water: 11.23 am, 11.50 pm; Low Water: 5.22 am, 5.25 pm.
Tooradin — High Water: 9.57 am, 10.17 pm; Low Water: 2.43 am, 2.58 pm.
Port Phillip Heads — High Water: 9.49 am, 9.55 pm; Low Water: 2.26 am, 2.56 pm.
Williamstown — High Water: - am, 12.48 pm; Low Water: 9.49 am, 9.55 pm.
Tooradin — High Water: 11.12 am, 11.18 pm; Low Water: 3.49 am, 4.19 pm.

WEATHER

AGE 24 MAY



Light rain and drizzle fell over the eastern half of Victoria yesterday but all totals were 1 mm or less. The sky was cloudy to overcast and the wind chiefly light and variable although some localities about the western and central coasts reported moderate south to southwesterlies. Moderate to fresh northeasterlies occurred about the far east Gippsland coast. Maximum temperatures were mostly between 12 and 18 degrees, the highest being 19 at Mildura. In Melbourne the temperature ranged from 12.6 at 3.40 am to 16.1 at 2.30 pm and 0.4 mm of rain fell in the city between 9 am and 5 pm. A trough of low pressure which extends from Queensland to Victoria is responsible for the rain. Victoria is in a light wind region between cells of high pressure centred southwest of Perth and over the Tasman sea. A weak cold front is approaching Tasmania. Little change is expected in the pressure pattern and the front will weaken further and not affect Victoria but a trough will persist over the State.

FORECASTS FOR TODAY

VICTORIA: Morning fog patches. A cool to mild day, with patchy rain or drizzle. Light to moderate south to south-east wind and a mainly slight sea.

CENTRAL DISTRICT: Morning fog patches. Cool and cloudy with a little rain or drizzle. Light to moderate south to south-east wind.

OUTLOOK: Occasional rain. Cool.

Port Phillip and Westernport Bays: South to south-east wind of 10 to 15 knots. Slight to choppy sea.

MELBOURNE: Morning fog patches. A cool, cloudy day with a little rain or drizzle. Light to moderate south to south-east wind.

OUTLOOK: Occasional rain. Cool.

CAPITAL CITY FORECASTS

Brisbane: Further rain, max. 22.

Sydney: Showers, max. 21.

Canberra: Light rain, max. 14.

Melbourne: Little rain, max. 16.

Hobart: Early drizzle, max. 13.

Adelaide: Cool and cloudy, max. 17.

Perth: Fine, max. 22.

Darwin: Fine, max. 31.

CAPITAL CITY TEMPERATURES

	Max.	Min.
Melbourne	16	8
Brisbane	21	18
Sydney	21	16
Canberra	14	11
Hobart	16	7
Darwin	30	21
Adelaide	19	10
Perth	23	16

MELBOURNE OBSERVATIONS

	Barometer mb	Dry Bulb deg.	Wet Bulb deg.	Rel Hty. PC.
3 am	1022.8	13.0	11.9	87
6 am	1022.8	12.9	12.3	93
9 am	1023.7	13.7	13.0	92
Noon	1023.4	16.0	14.4	83
3 pm	1022.2	15.6	12.8	71
6 pm	1023.1	14.7	12.4	75
9 pm	1024.6	14.3	11.9	73

SHIPPING MOVEMENTS

Due Today

ARAFURA, 2 West Swanson Dock, OCAL.

ACT 6, berth to be advised, ACTA.

BOOGABILLA, 8 Appleton Dock, Wilhelmsens.

POZNAN, D Appleton Dock, HC Sleigh.

GOLIATH, 9 North Wharf, Union Bulkships.

IRON CURTIS, Outer West Station Pier, BHP.

CORAL CHIEF, berth to be advised, Nedlloyd Swire.

EIGAMOIYA, 6 Yarraville, Nauru Corporation.

UNION LYTTELTON, 5 Victoria Dock, Union Bulkships.

BRISBANE TRADER, 3 Webb Dock, ANL.

STRAITSMAN, 14 South Wharf, Tasmanian Transport Commission.

Sailing Today

IRON DUKE, 21 South Wharf, BHP.

WISTARIA PEARL, 28 South Wharf, McArthur.

ESSO GIPPSLAND, Holden Dock, Esso Australia.

BRISBANE TRADER, 3 Webb Dock, ANL.

STRAITSMAN, 14 South Wharf, Tasmanian Transport Commission.

Due Tomorrow

EMPRESS OF AUSTRALIA, 1 Webb Dock, ANL.

SYDNEY TRADER, 3 Webb Dock, ANL.

TOYOFUJI No. 8, 4 Webb Dock, ANL.

KANGOUROU, 1 West Swanson Dock Seabridge.

COLUMBUS CALIFORNIA, 1 East Swanson Dock, Columbus Overseas.

MARABOU, berth to be advised, Wilhelmsen.

SKULPTOR ZALKALNS, D Appleton Dock, Opal Maritime.

SEAWAY PRINCESS, 6 Victoria Dock, Union Bulkships.

SEA ARROW, berth to be advised, Heth Westfarmers.

Sailing Tomorrow

EMPRESS OF AUSTRALIA, 1 Webb Dock, ANL.

SYDNEY TRADER, 3 Webb Dock, ANL.

ACT 6, berth to be advised, ACTA.

COLUMBUS CALIFORNIA, 1 East Swanson Dock, Columbus Overseas.

ASIAN PEARL, berth to be advised, Nedlloyd Swire.

CAPITAINE WALLIS, 30 South Wharf, Trans Australia.

GOLIATH, 9 North Wharf, Union Bulkships.

SEAWAY PRINCESS, 6 Victoria Dock, Union Bulkships.

MATTHEW FLINDERS, 14 Victoria Dock, Ports and Harbors.

WORLD WEATHER

Temperatures around the world yesterday were:

		Min.	Max.
Amsterdam	rain	10	16
Athens	clear	18	31
Bahrain	clear	26	34
Bangkok	clear	31	38
Barbados	rain	24	30
Beirut	clear	16	24
Berlin	cloudy	12	18
Bogota	rain	8	18
Brussels	cloudy	7	17
Buenos Aires	cloudy	14	19
Cairo	clear	19	31
Calgary	cloudy	4	18
Caracas	cloudy	21	28
Chicago	rain	10	22
Copenhagen	cloudy	13	17
Curitiba	rain	13	18
Denpasar	cloudy	22	30
Dublin	cloudy	9	14
Frankfurt	clear	9	19
Geneva	rain	7	12
Havanna	cloudy	23	31
Helsinki	clear	8	15
Hong Kong	cloudy	25	30
Honolulu	cloudy	19	29
Jakarta	cloudy	22	30
Jerusalem	cloudy	12	22
Johannesburg	rain	12	20
Kiev	cloudy	17	25
Kuala Lumpur	rain	24	34
Lima	clear	23	29
Lisbon	rain	8	16
London	cloudy	8	15
Los Angeles	cloudy	19	26
Madrid	clear	3	15
Manila	clear	23	38
Miami	cloudy	25	27
Montevideo	clear	9	19
Montreal	cloudy	10	19
Moscow	clear	13	22
Nassau	clear	22	30
New Delhi	clear	24	34
New York	rain	16	20
Nicosia	cloudy	14	25
Oslo	rain	9	12
Paris	cloudy	7	13
Peking	rain	17	21
Rio de Janeiro	clear	19	28
Rome	clear	14	30
San Francisco	clear	11	21
San Juan	cloudy	25	31
Santiago	cloudy	8	18
Sao Paulo	clear	15	22
Seoul	clear	16	28
Singapore	clear	25	32
Stockholm	clear	8	20
Taipei	rain	23	29
Tel Aviv	cloudy	18	24
Tokyo	clear	20	28
Toronto	cloudy	13	18
Vancouver	cloudy	11	17
Vienna	cloudy	15	27

EPA LEVELS

No readings were available yesterday due to an instrument malfunction.

THE TIDES

TODAY

Port Phillip Heads. High water, 9.49 am, 9.55 pm. Low water, 2.26 am, 2.55 pm.

Williamstown. High water, am, 12.48 pm. Low water, 9.49 am, 9.55 pm.

Tooradin. High water, 11.12 am, 11.18 pm. Low water, 3.49 am, 4.19 pm.

TOMORROW

Port Phillip Heads. High water, 10.59 am, 10.54 pm. Low water, 3.46 am, 4.31 pm.

Williamstown. High water, 12.45 am, 2.06 pm. Low water, 7.42 am, 8.05 pm.

Tooradin. High water, am, 12.22 pm. Low water, 5.09 am, 5.54 pm.

SUN, MOON & PLANETS

TODAY

	Rises	Sets
SUN	7.20 am	5.14 pm
MOON	3.55 pm	4.15 am
MERCURY	5.57 am	4.36 pm
VENUS	10.48 am	8.09 pm
MARS	7.36 am	5.22 pm
JUPITER	5.19 pm	7.48 am
SATURN	3.36 pm	4.39 am

TOMORROW

	Rises	Sets
SUN	7.21 am	5.13 pm
MOON	4.25 pm	5.20 am
MERCURY	5.53 am	4.32 pm
VENUS	10.48 am	8.10 pm
MARS	7.35 am	5.21 pm
JUPITER	5.15 pm	7.44 am
SATURN	3.32 pm	4.34 am

MAIL TIMES

BY SEA

BRITAIN, Flinders Bay, (pcls and OA) 5 pm, (L) 11.30 pm, 1 June.

AMERICA, Columbus Victoria, (pcls and OA) 5 pm, (L) 11.30 pm, 30 May.

NEW ZEALAND, Marama, (pcls and OA) 5 pm, (L) 11.30 pm, 25 May.

MOSLEM PRAYER TIMES

Prayer times for today, the 11th day of Shaban, are 6.04 and 7.20 am and 12.27, 2.55, 5.14 and 6.30 pm.

MAY 25th 1983

BENDIGO

Cool and cloudy. Top: 16.

Early morning fog clearing to a fine and cool day.

MELBOURNE

Cool and cloudy. Top: 17.

Early morning drizzle clearing to a mostly fine and cool day.

VICTORIA

Cool and cloudy with a light south east wind. Slight seas.

YESTERDAY

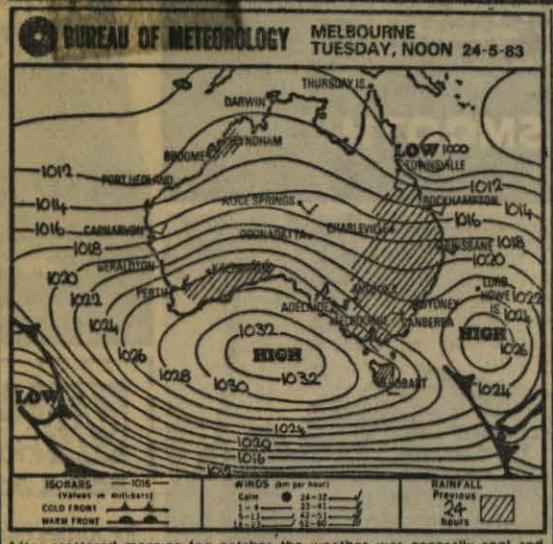
Bendigo was fine and cool yesterday with a top of 15.4 after an overnight low of 11.4.

Other readings: Dry bulb 14.8, wet 11.2; wind, south at 4 knots; barometer, 1023.3 and falling; humidity, 62 per cent.

Capital city temperatures: Melbourne 15, 13; Perth 32, 17; Darwin 30, 21; Adelaide 17, 12; Hobart 12, 8; Canberra 17, 8; Sydney 18, 15; Brisbane 24, 17.



WEATHER



After scattered morning fog patches the weather was generally cool and cloudy over Victoria and areas of rain and drizzle contracted to the east. In the six hours to 3 pm the highest falls recorded were 11 mm at Lakes Entrance and 8 mm at East Sale. Wind was generally a south to south-easterly and locally fresh about the coast. Maximum temperatures varied between 11 and 17 C at most centres with the highest of 18 C recorded at both Mildura and Corryong. In contrast, Mt Hotham's temperature reached a high of only 6 C. Melbourne's temperature ranged from a low of 13.2 C at 6.45 am to a high of 15.2 C at 12.35 pm. Although light drizzle fell in the city during the day it was insufficient to register in the gauge. A large slow-moving high centred south of the bight is directing a south to south-easterly airstream over Victoria. A weak cold front is crossing the Tasman Sea. The rain over the State was associated with an upper level trough. The cloud mass associated with the upper level trough will clear eastern Victoria tomorrow. The high will remain slow-moving with the south to south-easterly airstream persisting over the State.

FORECASTS FOR TODAY

VICTORIA: Generally cool and cloudy with a south-east wind occasionally fresh about the coast. Isolated early morning fog patches. Areas of drizzle contracting to Gippsland during the morning. Slight to moderate sea.

AGE 25 MAY

CENTRAL DISTRICT: Cool and cloudy with a light to moderate south-east wind. Isolated early fog patches and areas of morning drizzle. Outlook Thursday: Cloudy. A little rain. Cool.

MELBOURNE: Cool and cloudy with morning fog or drizzle patches. Light to moderate south-east wind. Expected top 17. Outlook Thursday: Cloudy. A little rain. Cool.

PORT PHILLIP BAY & WESTERNPORT: South to south-east wind of 10 to 15 knots. Slight to choppy sea.

CAPITAL CITY FORECASTS

Brisbane: Shower, 24.
Sydney: Showery, 19.
Canberra: Further rain, 14.
Melbourne: Drizzle clearing, 17.
Hobart: Fine, 14.
Adelaide: Mainly fine, 17.
Perth: Brief shower, 24.
Darwin: Fine, 31.

THE TIDES

TODAY

Port Phillip Heads. High water, 10.59 am, 10.54 pm. Low water, 3.46 am, 4.31 pm.
Williamstown. High water, 12.45 am, 2.06 pm. Low water, 7.42 am, 8.05 pm.
Tooradin. High water, am, 12.22 pm. Low water, 5.09 am, 5.54 pm.

TOMORROW

Port Phillip Heads. High water 12 noon, 11.49 pm. Low water, 4.54 am, 5.42 pm.
Williamstown. High water, 1.37 am, 3.12 pm. Low water, 8.42 am, 9.05 pm.
Tooradin. High water, 11.17 am, 1.23 pm. Low water, 6.17 am, 7.05 pm.

SHIPPING MOVEMENTS

Due today

EMPRESS OF AUSTRALIA, 1 Webb Dock, ANL.
SYDNEY TRADER, 3 Webb Dock, ANL.
TOYOFUJI No. 8, 4 Webb Dock, ANL.
AUSTRALIAN ESCORT, 5 Webb Dock, ANL.
SEAWAY PRINCESS, 6 Victoria Dock, Union Bulkships.
CAPITAINE WALLIS, 30 South Wharf, Trans Austral.
COLUMBUS CALIFORNIA, 1 East Swanson Dock, Columbus Overseas.
ACT 6, 3 East Swanson Dock, ACTA.
PYOTR MASHEROV, berth to be advised, Opal.
SKULPTOR ZALKALNS, berth to be advised, Opal.

CONTROLLING TRUSTEE

Sailing today

EMPRESS OF AUSTRALIA, 1 Webb Dock, ANL.
SYDNEY TRADER, 3 webb Dock, ANL.
ORMISTON, 5 Yarraville, Union Bulkships.
SEAWAY PRINCESS, 6 Victoria Dock, Union Bulkships.
GOLIATH, 9 North Wharf, Union Bulkships.
CAPITAINE WALLIS, 30 South Wharf, Trans Austral.
BOOGHABILLA, 8 Appleton Dock, Wilhelmsens.
COLUMBUS CALIFORNIA, 1 East Swanson Dock, Columbus Overseas.
ASIAN PEARL, 4 East Swanson Dock, Nedlloyd Swire.

Due tomorrow

BRISBANE TRADER, 3 Webb Dock, ANL.
MARAMA, 6 Victoria Dock, Union Bulkships.
ZINCMASTER, 1 Yarraville, Union Bulkships.
TASMAN HARVEST, berth to be advised, Wilhemsens.
POTOI ISLAND, berth to be advised, Heth Westfarmers.

SUN, MOON & PLANETS

TODAY

	Rises	Sets
SUN	7.21 am	5.13 pm
MOON	4.25 pm	5.20 am
MERCURY	5.53 am	4.32 pm
VENUS	10.48 am	8.10 pm
MARS	7.35 am	5.21 pm
JUPITER	5.15 pm	7.44 am
SATURN	3.32 pm	4.34 am

TOMORROW

	Rises	Sets
SUN	7.22 am	5.12 pm
MOON	4.59 pm	6.24 am
MERCURY	5.48 am	4.29 pm
VENUS	10.48 am	8.12 pm
MARS	7.35 am	5.19 pm
JUPITER	5.10 pm	7.39 am
SATURN	3.28 pm	4.30 am

MAIL TIMES

BY SEA

BRITAIN: Flinders Bay, AOs, 5 pm, L, 11.30 pm, 1 June.
AMERICA: Col Victoria, AOs, 5 pm, L, 11.30 pm, 30 May.
NEW ZEALAND: Marama, AOs, 5 pm, L, 11.30 pm, 26 May.

MOSLEM PRAYER TIMES

Prayer times for today the 12th day of Tair are 6.05 and 7.21 am and 12.27, 2.55, 5.13 and 6.30 pm.

20MA483

FOLIO	QUESTIONAIRE RETURNED	DIRECTION FIRST SIGHTED	LOCATION	MOVEMENT	NUMBER OF LIGHTS	TIME	DURATION	NAME
39	YES	190° (SW)	BENELONG, N.S.W.	SLOWLY SOUTH TO EAST	ONE	2355	1 HOUR & 5 MINS.	MR. R.A. HENDY

21 MAY 83

FOLIO	QUESTIONAIRE RETURNED	DIRECTION FIRST SIGHTED	LOCATION	MOVEMENT	NUMBER OF LIGHTS	TIME	DURATION	NAME
8	NO	NOT KNOWN	WINDSOR, MELBOURNE	GOING SOUTH	ONE	0120 HRS.	5-10 SECONDS	MS. A. BURNET
34	YES	SOUTH, SOUTH WEST	BRIDGE ST., BENDIGO	SOUTH, SOUTH WEST.	THREE	2320	1 HOUR, 10 MINUTES.	MS. S. MELLING
7+40	YES	NORTH	SEYMOUR/PUCKAPUNYAL ROAD, TOOBORAC	STAYED WITHIN A 10 MILE RADIUS.	THREE	2330	1 HOUR	MR. P. SAVAGE
64	YES	15° SOUTH OF EAST	BAGSHOT TO GOORNONG	NOT KNOWN	SEVEN→ONE→TWO	2350	10 MINS.	MR. B. CRUMPLER
67	YES	EAST	CASTLEMAINE	GOING NORTH	ONE	2000 approx.	10 MINS.	MS. I. JONES
72	YES	SOUTH, SOUTH WEST.	RODNEY ST., BENDIGO	NO MOVEMENT FOR ½ HR. THEN SLOWLY MOVED SOUTH	ONE LARGE & ONE SMALL	2310	FORTY MINUTES	MRS. S. GUAMPIETRO
75	YES	SOUTH EAST	7 KM. NTH. WEST OF ELMORE	NOT KNOWN	ONE AND TWO	2230	TWENTY MINUTES	MR. A. HOLMBERG AND MR. G. HOLMBERG

22 MAY 83

FOLIO	QUESTIONAIRE RETURNED	DIRECTION FIRST SIGHTED	LOCATION	MOVEMENT	NUMBER OF LIGHTS	TIME	DURATION	NAME
59	YES	North, North West.	PASTORIA RD. PIPERS CREEK.	STATIONARY	ONE	0530	10 mins.	MRS. R. MURPHY
74	YES	EAST	KING ISLAND, TASMANIA	EAST TO SOUTH EAST	ONE OR FIVE IN A CLUSTER	1750	NOT GIVEN	MR. E. YOUNG

23 MAY 83

FOLIO	QUESTIONAIRE RETURNED	DIRECTION FIRST SIGHTED	LOCATION	MOVEMENT	NUMBER OF LIGHTS	TIME	DURATION	NAME
9	No.	DIRECTLY ABOVE	MULGRAVE	SOUTH	ONE	1920	10 mins.	MRS. DENMAN.

24 MAY83.

FOLIO	QUESTIONAIRE RETURNED	DIRECTION FIRST SIGHTED	LOCATION	MOVEMENT	NUMBER OF LIGHTS	TIME	DURATION	NAME
56	YES	NOT STATED	HOPETOUN ST. BENDIGO	Straight in NTH.W. direction	ONE	1920	FIVE SECONDS	MR. R. ROSE

25MAY83

FOLIO	QUESTIONAIRE RETURNED	DIRECTION FIRST SIGHTED	LOCATION	MOVEMENT	NUMBER OF LIGHTS	TIME	DURATION	NAME
10+55	YES	190°	MARSHALL CRES. BENDIGO	Straight Line	1 object, 3 lights	0200	One Minute	MR. D. MARTIN
12+31	No	NTH. WEST	STRATHFIELDSAYE	Easterly	2-3	1945	Five minutes	MR. R. MAIN
13	NOT REQUESTED	NOT stated	Ripponlea, Doncaster, Forest Hill	NOT stated	ONE	Prior to 2130	NOT Stated	NOT GIVEN
14	No	STH. WEST	WERRIBEE	Going towards Geelong	ONE	2100	TWENTY TWO MINS.	MR. SOAN and MRS NATOLI
15	No	WEST	CALIFORNIA GULLY, BENDIGO	STATIONARY	ONE	2130	At least 15 mins.	MS. J. RUSSELL
16+35	YES	WEST	BLACKBURN	WEST TO SOUTH	ONE	2030	EIGHT HOURS	MR. R. McPHERSON
17	No.	SOUTH	BENDIGO	STATIONARY	ONE	2145	15-20mins	MRS. CROOK
18+51	YES	Towards city	PORT MELBOURNE	STATIONARY	ONE	2230	FIFTY-FIVE mins.	Ms. A. SMITH
19	No.	Towards SW.	BRAYBROOK	STATIONARY/DESCENDING	ONE	2240	NOT GIVEN	Ms. W. SMIT
20	NOT REQUESTED	STH. To S.W.	Various Places in MELB.	SLOW ALMOST STATIONARY	ONE	2300	NOT GIVEN	MR. B. Rule (calls to him at change 9)
21 (SEE FOLIO 6 OF PT B)	YES	EAST SOUTH	MOOROOLBARK	Up and DOWN	ONE	2320	FORTY-FIVE MINS.	Ms. J. ABRAM
22	NOT REQUESTED	STH. WEST	SUN NEWSBUILDING	STATIONARY	ONE	2340	NOT GIVEN	MR. D. MACDONNELL
23	NOT REQUESTED	NORTHERLY	HAMPTON PARK	VERY QUICKLY	THREE	2315	NOT GIVEN	R.K. CATHRERY
24	NOT REQUESTED	Directly OVERHEAD	NORTH BALWYN	NTH. WEST.	ONE	1500	TEN SECONDS	MR. A. CADD
44	YES	SOUTHERLY	EAST DONCASTER	WESTWARDLY	SEVEN	1930	From 18-4-83 - 25-5-83	MRS. C. RADICH & SON

26MAY83

FOLIO	QUESTIONAIRE RETURNED	DIRECTION FIRST SIGHTED	LOCATION	MOVEMENT	NUMBER OF LIGHTS	TIME	DURATION	NAME
25	NOT REQUESTED	NTH. WEST	HAMPTON PARK	STATIONARY	ONE	2030	TEN MINS.	MR. R. WALHOUT
29+50	YES	EAST TO SOUTH	CAMBERWELL	FALLING TOWARDS EARTH	POSSIBLEY THREE	1740	NOT STATED	MR. A. SPRY
30	NO	NTH. WEST	NTH. NOBLE PARK	STATIONARY	ONE	1900	THIRTY MINS.	MR. C. POWER
32+71	YES	NOT STATED	MT. EVELYN	SLOW	ONE	2030	HALF AN HOUR	MR. & MRS HARMAN
27MAY83								
47	YES	45°	GLENROY	NOT STATED	ONE	1200	TWENTY MINUTES	MRS. ROWNTREE
28MAY83								
57	YES	EAST-WEST	PRAHAN	EAST-WEST	TWO	2155	THREE minutes	MS N. KELSNO
29MAY83								
65+37	YES	NORTH WEST	MELTON	UNABLE TO DETERMINE	ONE	1920	SEVEN MINUTES	MR. P. TAYLOR.

WEATHER OBSERVATIONS

21 May 1983

08 GMT

	Bendigo	Melbourne Airport	Melbourne City
Temperature	15°C	10°C	12°C
Dewpoint	8°	9°	9°
Visibility	50 km	5000 metres	2000 metres
Pressure	1026.0 mb	1026.8 mb	1026.8 mb
Cloud	Clear sky	1/8 ST 1000 ft	1/8 ST 1000 ft
Wind	Calm	Calm	Calm
Weather	Fine	Distant Fog	Mist

11 GMT

Temperature	10°C	7°C	9°C
Dewpoint	6°	7°	8°
Visibility	50 km	15 km	2000 metres
Cloud	Clear Sky	1/8 ST 1000 ft	Sky Clear
Wind	Calm	Calm	Calm
Weather	Fine	Distant Fog	Mist
Pressure	1026.8	1027.4	1027.8

17 GMT

Temperature	8°C	6°C	7°C
Dewpoint	5°	5°	7°
Visibility	50 km	8 km	200 m
Pressure	1026.0	1026.0	1026.4
Cloud	Clear Sky	Clear Sky	8/8 ST 00 ft
Wind	SW/02	NW/05	ENE/01
Weather	Fine	Distant Fog	Fog

20 GMT

Temperature	7°C	5°C	8°C
Dewpoint	4°	4°	8°
Visibility	50 km	15 km	200 metres
Cloud	Clear Sky	1/8 ST 4000 ft	8/8 ST 00 ft
Wind	S/5 kts	N/10 kts	Calm
Weather	Fine	Distant Fog	Fog

22 May 1983

08Z

Temperature	15°C	14°C	15°C
Dewpoint	12°	10°	13°
Visibility	20 km	15 km	20 km
Barometer	1023.3	1023.1	1023.2
Cloud	8/8 ST 2000-3500 ft	7/8 AC 10,000 ft	4/8 SC 5000 ft
Wind	S/05 kt	Calm	Calm
Weather	Overcast	Smoke Haze	Smoke Haze

11Z

Temperature	14°C	12°C	14°C
Dewpoint	11°	10°	11°
Visibility	20 km	15 km	20 km
Barometer	1023.6	1023.6	1023.8
Cloud	8/8 CU 2000-3500 ft	7/8 AC 10,000 ft	1/8 SC 5000 ft 6/8 AC
Wind	NE/05	WSW/05	SSW/02
Weather	Overcast	Smoke Haze	Smoke Haze

.../2

22 May 1983

	Bendigo	Melbourne Airport	Melbourne City
17Z			
Temperature	13°C	12°C	13°C
Dewpoint	12°	10°	11°
Visibility	50 km	20 km	10 km
Barometer	1022.5	1023.2	1022.8
Cloud	8/8 SC 2000-3500 ft	6/8 AC 10,000 ft	2/8 ST 1500 ft 7/8 AC
Wind	SE/02	Calm	Calm
Weather	Slight drizzle (1 mm)	Smoke Haze	Mist
20Z			
Temperature	13°C	12°C	13°C
Dewpoint	12°	10°	12°
Visibility	50 km	15 km	8 km
Barometer	1022.2	1022.6	1022.8
Cloud	8/8 SC 2000-3500 ft	7/8 AC 10,000 ft	8/8 AC
Wind	SE/05	Calm	Calm
Weather	Overcast	Smoke Haze	Mist

25 May 1983

	Bendigo	Melbourne Airport	Melbourne City
08Z			
Temperature	13°C	12°C	14°C
Dewpoint	9°	8°	9°
Visibility	50 km	25 km	30 km
Barometer	1024.6	1025.5	1025.4
Cloud	6/8 AC + Ci	2/8 CU 3000 ft 4/8 SC 4,500 AC	2/8 SC 3500 1/8 AC 1/8 Ci
Wind	SE/05	SSW/10	SE/03
Weather	Cloudy	Cloudy	Fine
11Z			
Temperature	12°C	9°C	12°C
Dewpoint	8°	7°	7°
Visibility	50 km	30 km	30 km
Barometer	1024.6	1026.3	1026.6
Cloud	6/8 AC + Ci	1/8 SC 5000 2/8 AC	1SC 3500 ft 2/8 Ci
Wind	SE/10 kt	SW/05	SSE/06
Weather	Cloudy	Cloudy	Fine
17Z			
Temperature	11°C	6°C	9°C
Dewpoint	7°	5°	6°
Visibility	50 km	30 km	30 km
Barometer	1024.6	1025.8	1026.2
Cloud	7/8 SC	2/8 AC	1 AC
Wind	SE/5 kt	Calm	ESE/05
Weather	Cloudy	Fine	Fine
20Z			
Temperature	11°C	5°C	7°C
Dewpoint	7°	5°	6°
Visibility	50 km	30 km	30 km
Barometer	1024.3	1025.7	1026.2
Cloud	8/8 SC 200-3500 ft	1/8 AC	4/8 Ci
Wind	SE/05	Calm	Calm
Weather	Past drizzle	Fine	Fine

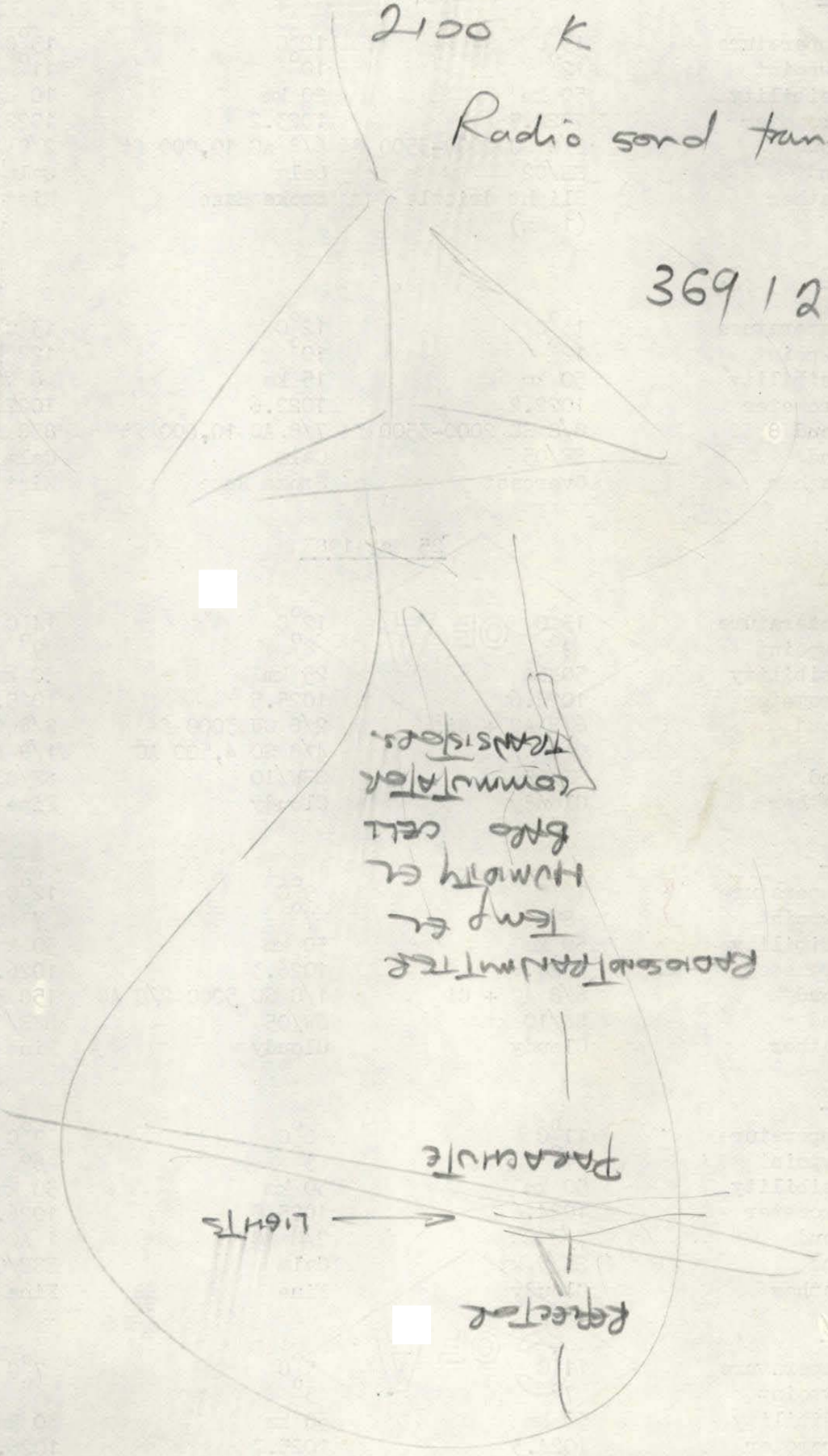
0300
1500 | Lost a balloon.

9900 K

2100 K

Radio sond transmitter

369 1226.



WEATHER OBSERVATIONS

21 May 1983

08 GMT

	Bendigo	Melbourne Airport	Melbourne City
Temperature	15°C	10°C	12°C
Dewpoint	8°	9°	9°
Visibility	50 km	5000 metres	2000 metres
Pressure	1026.0 mb	1026.8 mb	1026.8 mb
Cloud	Clear sky	1/8 ST 1000 ft	1/8 ST 1000 ft
Wind	Calm	Calm	Calm
Weather	Fine	Distant Fog	Mist

11 GMT

Temperature	10°C	7°C	9°C
Dewpoint	6°	7°	8°
Visibility	50 km	15 km	2000 metres
Cloud	Clear Sky	1/8 ST 1000 ft	Sky Clear
Wind	Calm	Calm	Calm
Weather	Fine	Distant Fog	Mist
Pressure	1026.8	1027.4	1027.8

17 GMT

Temperature	8°C	6°C	7°C
Dewpoint	5°	5°	7°
Visibility	50 km	8 km	200 m
Pressure	1026.0	1026.0	1026.4
Cloud	Clear Sky	Clear Sky	8/8 ST 00 ft
Wind	SW/02	NW/05	ENE/01
Weather	Fine	Distant Fog	Fog

20 GMT

Temperature	7°C	5°C	8°C
Dewpoint	4°	4°	8°
Visibility	50 km	15 km	200 metres
Cloud	Clear Sky	1/8 ST 4000 ft	8/8 ST 00 ft
Wind	S/5 kts	N/10 kts	Calm
Weather	Fine	Distant Fog	Fog

22 May 1983

08Z

Temperature	15°C	14°C	15°C
Dewpoint	12°	10°	13°
Visibility	20 km	15 km	20 km
Barometer	1023.3	1023.1	1023.2
Cloud	8/8 ST 2000-3500 ft	7/8 AC 10,000 ft	4/8 SC 5000 ft
Wind	S/05 kt	Calm	Calm
Weather	Overcast	Smoke Haze	Smoke Haze

11Z

Temperature	14°C	12°C	14°C
Dewpoint	11°	10°	11°
Visibility	20 km	15 km	20 km
Barometer	1023.6	1023.6	1023.8
Cloud	8/8 CU 2000-3500 ft	7/8 AC 10,000 ft	1/8 SC 5000 ft 6/8 AC
Wind	NE/05	WSW/05	SSW/02
Weather	Overcast	Smoke Haze	Smoke Haze

.../2

22 May 1983

	Bendigo	Melbourne Airport	Melbourne City
17Z			
Temperature	13°C	12°C	13°C
Dewpoint	12°	10°	11°
Visibility	50 km	20 km	10 km
Barometer	1022.5	1023.2	1022.8
Cloud	8/8 SC 2000-3500 ft	6/8 AC 10,000 ft	2/8 ST 1500 ft 7/8 AC
Wind	SE/02	Calm	Calm
Weather	Slight drizzle (1 mm)	Smoke Haze	Mist
20Z			
Temperature	13°C	12°C	13°C
Dewpoint	12°	10°	12°
Visibility	50 km	15 km	8 km
Barometer	1022.2	1022.6	1022.8
Cloud	8/8 SC 2000-3500 ft	7/8 AC 10,000 ft	8/8 AC
Wind	SE/05	Calm	Calm
Weather	Overcast	Smoke Haze	Mist

25 May 1983

08Z			
Temperature	13°C	12°C	14°C
Dewpoint	9°	8°	9°
Visibility	50 km	25 km	30 km
Barometer	1024.6	1025.5	1025.4
Cloud	6/8 AC + Ci	2/8 CU 3000 ft 4/8 SC 4,500 AC	2/8 SC 3500 1/8 AC 1/8 Ci
Wind	SE/05	SSW/10	SE/03
Weather	Cloudy	Cloudy	Fine
11Z			
Temperature	12°C	9°C	12°C
Dewpoint	8°	7°	7°
Visibility	50 km	30 km	30 km
Barometer	1024.6	1026.3	1026.6
Cloud	6/8 AC + Ci	1/8 SC 5000 2/8 AC	1SC 3500 ft 2/8 Ci
Wind	SE/10 kt	SW/05	SSE/06
Weather	Cloudy	Cloudy	Fine
17Z			
Temperature	11°C	6°C	9°C
Dewpoint	7°	5°	6°
Visibility	50 km	30 km	30 km
Barometer	1024.6	1025.8	1026.2
Cloud	7/8 SC	2/8 AC	1 AC
Wind	SE/5 kt	Calm	ESE/05
Weather	Cloudy	Fine	Fine
20Z			
Temperature	11°C	5°C	7°C
Dewpoint	7°	5°	6°
Visibility	50 km	30 km	30 km
Barometer	1024.3	1025.7	1026.2
Cloud	8/8 SC 200-3500 ft	1/8 AC	4/8 Ci
Wind	SE/05	Calm	Calm
Weather	Past drizzle	Fine	Fine

LOCAL CLOCK TIME	PRESSURE	TEMPERATURE				WIND		VISIBILITY	CLOUD																			
	Station Level (Millibars)	Dry Bulb	Wet Bulb	Wet Bulb Depression	Dew Point		Direction (16 points of compass)	Speed (Knots)	(Metres or kilometres)	Total Amt. 0–8	Low – 1st Layer					Low – 2nd Layer					Low – 3rd Layer					Middle			
											Amt. 0–8.	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Height of Base	Direc–tion from	Amt. 0–8	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Direc-tion from
	18–22	23–26	27–29	—	30–31	–	32–33	34–35	36–38	39	40	–	41	42–43	44–45	46	–	47	48–49	50–51	–	–	–	–	–	52	–	53	54–55
0000	•	•	•	•	•	•																						
0300	998 •7	08 •0	06 •5	01 •5	04	•6	SW	02	50	0	0																	
0600	998 •1	07 •2	06 •0	01 •2	04	•2	S	03	50	0	0																	
0900	999 •0	09 •2	07 •6	01 •6	05	•5	00	00	50	2	0															0			
1200	999 •2	16 •5	12 •1	04 •4	07	•8	00	00	50	7	0															7	AC	3	—
1500	995 •0	17 •5	13 •0	04 •5	08	•9	E	01	50	7	7	Sc	5	25	—														
1800	996 •2	15 •0	13 •5	01 •5	12	•3	S	05	50	8	8	[illegible]	7	25	—														
2100	996 •5	13 •8	12 •0	01 •8	10	•6	NE	02	50	8	8	CB	3	20	—														

REMARKS (Instruments, Exceptional Weather, etc.)	MAXIMUM THERMOMETER				MINIMUM THERMOMETER			TERRESTRIAL MINIMUM THERMOMETER		RAINFALL	
	0900		1500 Without Touching	Before Touching 0900 Tomorrow (See Note 2)	0900		1500 Without Touching	0900 Before Touching	After Setting (See Note 3)	24 Hours to 0900 (millimetres)	
	Before Touching (See Note 1	After Setting			Before Touching	After Setting					
	—	—	—	15–18	19–21	—	—	22–24	—	25–28	29
	18 •4	09 •1	19 •0	19 •0	06 •0	08 •7	07 •2	•	•	000 •0	

Note 1 – Also enter this reading in Col 15–18 on previous page.

Note 2 – Enter in this column the Maximum Thermometer reading taken before touching 0900 tomorrow.

Note 3 – Expose as late as possible before sunset. Read after exposure.

REMOTE SENSORS

Local Time	DB	WBD
0900		
1500		

PRESSURE AND CORRECTIONS

Time			0000	0300	0600	0900	1200	1500	1800	2100
Attached Thermometer			•	8 •5	12 •0	20 •0	22 •0	24 •0	22 •0	20 •5
Barometer as read				1002 •9	1003 •9	1003 •5	1003 •0	1000 •1	1001 •0	1001 •0
Corrections	For Station Level			– 4 •2	– 4 •9	– 4 •5	– 4 •8	– 5 •1	– 4 •8	– 4 •5
		SL (mb)	•	998 •7	999 •1	999 •0	998 •2	995 •0	996 •2	996 •5
	For MSL		•	+ 27 •3	+ 27 •3	+ 27 •3	+ 27 •3	+ 27 •1	+ 27 •1	+ 27 •1
Mean Sea Level (mb)			•	1026 •0	1026 •4	1026 •3	1025 •5	1022 •1	1023 •3	1023 •6

CODED SYNOPTIC REPORTS

STATION NAME	AAXX	Y Y G G i_w	I I i i i	i_R i_x h V V	N d d f f	1 s_n T T T	2 s_n T_d T_d T_d	4 P P P P	5 a p p p	6 R R R t_R	7 w w W_1 W_2	8 N_h C_L C_M C_H
	AAXX			1		1	2	4	5		7	8
BENDIGO	AAXX	21174	94855	3 1999	02302	1 0080	2 0846	4 0260	5 7008	6 1	7 0200	8 0000
✓	AAXX	21204	✓	4 1999	01803	1 0072	2 0042	4 0254	5 6004		7 0800	8 0000
✓	AAXX	21234	✓	3 1899	80000	1 0092	2 0055	4 0263	5 3006	6 4	7 0300	8 0006
✓	AAXX	22024	✓	4 1699	70000	1 0165	2 0077	4 0255	5 5008	6 1	7 0271	8 703–
✓	AAXX	22054	✓	5 1599	70001	1 0175	2 0089	4 0251	5 7080		7 0888	8 75//
✓	AAXX	22084	✓	4 1599	80805	1 0150	2 0123	4 0233	5 1002		7 0322	8 87//
✓	AAXX	22114	✓	3 1599	80502	1 0138	2 0106	4 0236	5 2003	6 1	7 0322	8 83//

CLOUD (Continued)				PRESENT WEATHER	
High					
Amt 0–8	Type	Code No.	Direc–tion from	Description	ww Code
56	—	57	58–59	—	60–61
				CLEAR SKY	02
				CLEAR SKY	02
2	Ci Cs	6		CLOUD INC	03
				CLOUD INC	03
				CLOUD UNCHANGED	02
				CLOUD INC	03
				UNCHANGED	02

EVAPORATION	CUP ANEMOMETER	MAXIMUM WIND GUST			SUNSHINE	RIVER HEIGHT
Class "A" Pan (mm) hrs to 0900	(Over 3 m) (whole units)	Direction	Speed (Knots)	Time	(Hours and Tenths)	0900 (metres)
30–32	33–36	37–38	39–41	42–44	45–47	48–51
•	km miles				•	•

EVAPORATION (Class "A" Pan) 0900

Water Temperature				Water Added or Removed				
Reading Before Touching		Reading After Setting		Added or Removed (A or R)	Number of Full Measures	Amount in Full Measures	Amount in Partly Full Measures	Tot
Max	Min	Max	Min					MILL
B	C	D	E	F	G x 4 = H		J*	K = H
					x 4 = •0		•	•

*IF WATER REMOVED – Subtract the reading of the partly

5 5 5	2 $D_L a' p' p'$	3 S K_S D_K /	4 $R_o R_m R_m R_m$	5 $T_x T_x T_n T_n$	7 $T_g T_g$ / /	8 N_s
5 5 5	2	3 /	4			8
5 5 5	2 0705	3 /	4			8
5 5 5	2 0707	3 /	4			8
5 5 5	2 9701	3 /	4	5 1806	7 //	8
5 5 5	2 9703	3 /	4			8
5 5 5	2 9717	3 /	4	5 19//		8
5 5 5	2 9209	3 /	4			8
5 5 5	2 9706	3 /	4			8

CLOUD (Continued)				PRESENT WEATHER		WEATHER SINCE LAST OBSERVATION		SOIL TEMP		SEA	RAINFALL			SOIL TEMP		CLOUD
High																
Amt 0–8	Type	Code No.	Direction from	Description	ww Code	Description	ww Code	10 (cm)	20 (cm)	State of Sea and Swell SK_SDK	Progress Total Since Prev. 0900	Amount Since Previous Obs	Total in Last 6 Hours	50 (cm)	100 (cm)	Amount of Sky obscured by Low Cloud 0–8
56	—	57	58–59	—	60–61	—	62–63	64–65	66–67	68–70	— (millimetres)	71–73	—	74–75	76–77	78
											•	•				
				CLEAR SKY	02	CLEAR SKY	02				000·0	000·0	000·0			0
				CLEAR SKY	02	CLEAR SKY	02				000·0	000·0				0
2	Cs Cs	6		CLOUD INC	03	CLOUD INC	03				000·0	000·0				0
				CLOUD INC	03	CLOUD INC	03				000·0	000·0				0
				CLOUD UNCHANGED	98	UNCHANGED	02				000·0	000·0	000·0			7
				CLOUD INC	03	CLOUD INC	03				000·0	000·0				8
				UNCHANGED	02	UNCHANGED	02				000·0	000·0	000·0			8

EVAPORATION	CUP ANEMOMETER		MAXIMUM WIND GUST			SUNSHINE	RIVER HEIGHT
Class "A" Pan (mm) ____hrs to 0900	(Over 3 m) (whole units)		Direction	Speed (Knots)	Time	(Hours and Tenths)	0900 (metres)
30–32	33–36		37–38	39–41	42–44	45–47	48–51
•		km / miles				•	•

PHENOMENA									
Hail	Snow	Thunderstorm or Thunder heard	Frost	Dust storm (vis. below 1 km)	Mist, Haze or Smoke	Fog (vis. below 1 km)	Strong Wind (mean of 22–33 kt)	Gale (mean of 34 kt or more)
52	53	54	55	56	57	58	59	60

Station Name: BENDIGO

Date (10–14): 22ND MAY

Day of Week: SUNDAY

Obs. Checked By:

EVAPORATION (Class "A" Pan) 0900

Water Temperature				Water Added or Removed					Rainfall	Evaporation
Reading Before Touching		Reading After Setting		Added or Removed (A or R)	Number of Full Measures	Amount in Full Measures	Amount in Partly Full Measures	Total	(from Rain Gauge) ___hrs to 0900	Cols L + K if A Cols L – K if R ___hrs to 0900
Max	Min	Max	Min			MILLIMETRES				
B	C	D	E	F	G x 4 = H	J*	K = H + J		L	M
					x 4 = •0	•	•	•	•	•

*IF WATER REMOVED – Subtract the reading of the partly full measure from 4.0 mm and enter result in Column J.

CUP ANEMOMETER 0900

	Under 3 m	Over 3 m
TODAY'S READING	•	•
YESTERDAY'S READING (subtract)	•	•
Difference during ___hours	•	•

CODED SYNOPTIC REPORTS

555	2 $D_L a^1 p^1 p^1$	3 S K_S D_K /	4 $R_0 R_m R_m R_m$	5 $T_x T_x T_n T_n$	7 $T_g T_g$ / /	8 $N_s C h_s h_s$	8 $N_s C n_s h_s$	8 $N_s C h_s h_s$	8 $N_s C h_s h_s$	9 $S_p S_p D_a e^1$	(77744	PLAIN LANGUAGE	) 44777
555	2	3 /	4			8	8	8	8	9	(77744		) 44777
555	2 0705	3 /	4			8	8	8	8	9	(77744		) 44777
555	2 0707	3 /	4			8	8	8	8	9	(77744		) 44777
555	2 9701	3 /	4	5 1806	7 / /	8	8	8	8	9	(77744		) 44777
555	2 9703	3 /	4			8	8	8	8	9	(77744		) 44777
555	2 9717	3 /	4	5 1911		8	8	8	8	9	(77744		) 44777
555	2 9209	3 /	4			8	8	8	8	9	(77744		) 44777
555	2 9706	3 /	4			8	8	8	8	9	(77744		) 44777

CLOUD																
	Low – 3rd Layer					Middle										
Amt 0–8	Type	Code No.	Height of Base	Direction from	Amt 0–8	Type	Code No.	Direction from								
50–51	–	–	–	–	–	52	–	53	54–55							
						0										
						7	AC	3	—							

TERRESTRIAL MINIMUM THERMOMETER		RAINFALL	
0900 Before Touching	After Setting (See Note 3)	24 Hours to 0900 (millimetres)	
22–24	—	25–28	29
•	•	000·0	

CORRECTIONS

0900	1200	1500	1800	2100
20·0	22·2	R4·0	22·0	20·5
003·5	1003·0	1000·1	1001·0	1001·6
– 4·5	– 4·8	– 5·1	– 4·8	– 4·5
999·0	998·2	995·0	996·2	996·5
27·3	+ 27·3	+ 27·1	+ 27·1	+ 27·1
026·3	1025·5	1022·1	1023·3	1023·6

P P	5 a p p p	6 R R R t_R	7 w w W_1 W_2	8 $N_h C_L C_M C_H$
	5		7	8
20	5 7008	6 1	7 0200	8 0000
24	5 6004		7 0800	8 0000
13	5 3006	6 4	7 0300	8 0006
25	5 5008		7 0221	8 703–
21	5 7080	6 1	7 0822	8 75//
33	5 1002		7 0322	8 8711
26	5 2003	6 1	7 0322	8 8311

LOCAL CLOCK TIME	PRESSURE	TEMPERATURE					WIND		VISIBILITY	CLOUD																			
	Station Level (Millibars)	Dry Bulb	Wet Bulb	Wet Bulb Depression	Dew Point		Direction (16 points of compass)	Speed (Knots)	(Metres or kilometres)	Total Amt. 0–8	Low – 1st Layer					Low – 2nd Layer					Low – 3rd Layer					Middle			
											Amt. 0–8.	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Direc–tion from
15–17	18–22	23–26	27–29	—	30–31	–	32–33	34–35	36–38	39	40	–	41	42–43	44–45	46	–	47	48–49	50–51	–	–	–	–	–	52	–	53	54–55
0000	•	•	•	•	•																								
0300	999·2	07·6	07·3	00·3	06·9		SW	02	50	0	0																		
0600	999·3	07·4	06·7	00·7	06·0		00	00	50	0	0																		
0900	1000·3	09·6	07·8	01·8	05·6		00	00	50	0	0																		
1200	1002·3	15·7	11·3	04·4	06·5		SE	01	50	0	0																		
1500	998·8	17·8	11·3	06·5	04·4		00	00	50	0	0																		
1800	998·7	14·5	11·2	03·3	07·9		00	00	50	0	0																		
2100	999·5	10·0	08·0	02·0	05·7		00	00	50	0	0																		

REMARKS (Instruments, Exceptional Weather, etc.)	MAXIMUM THERMOMETER				MINIMUM THERMOMETER			TERRESTRIAL MINIMUM THERMOMETER		RAINFALL	
	0900		1500 Without Touching	Before Touching 0900 Tomorrow (See Note 2)	0900		1500 Without Touching	0900 Before Touching	After Setting (See Note 3)	24 Hours to 0900 (millimetres)	
	Before Touching (See Note 1)	After Setting			Before Touching	After Setting					
	—	—	—	15–18	19–21	—	—	22–24	—	25–28	29
	18·0	09·4	18·4	18·4	05·4	05·9	08·0	•	•	000·0	

Note 1 – Also enter this reading in Col 15–18 on previous page.

Note 2 – Enter in this column the Maximum Thermometer reading taken before touching 0900 tomorrow.

Note 3 – Expose as late as possible before sunset. Read after exposure.

REMOTE SENSORS

Local Time	DB	WBD
0900		
1500		

PRESSURE AND CORRECTIONS

Time			0000	0300	0600	0900	1200	1500	1800	2100
Attached Thermometer			•	17·5	22·5	22·5	17·5	9·0	23·0	19·0
Barometer as read				1003·2	1004·3	1005·2	1004·7	1003·1	1003·7	1003·8
Corrections	For Station Level			– 5·0	– 5·0	– 4·9	– 4·4	– 4·3	– 5·0	– 4·3
		SL (mb)	•	998·2	999·3	1000·3	1000·3	998·8	998·7	999·5
	For MSL		•	– 8·7	– 8·7	+ 27·3	+ 27·3	+ 27·3	+ 27·3	+ 27·3
Mean Sea Level (mb)			•	1025·5	1026·6	1027·6	1027·6	1026·1	1026·0	1026·8

CODED SYNOPTIC REPORTS

STATION NAME		AAXX	Y Y G G i_w	I I i i i	i_R i_x h V V	N d d f f	1 s_n T T T	2 s_n T_d T_d T_d	4 P P P P	5 a p p p	6 R R R t_R	7 w w W_1 W_2	8 N_h C_L C_M C_H
		AAXX			1		1	2	4	5		7	8
BENDIGO		AAXX	20 174	94855	3 1 9	0 5	1	2	4	5 6004	6 1	7	8
✓		AAXX	20 204	✓	4 1 9	00000	1 0074	2 0060	4	5		7 0200	8 0000
✓		AAXX	20 234	✓	3 1 9	00000	1 0096	2 0056	4 0276	5 2011	6 4	7 0200	8 0000
✓		AAXX	21 024	✓	4 1 9	01401	1 0157	2 0065	4 0276	5 0002		7 0200	8 0000
✓		AAXX	21 054	✓	3 1 9	00000	1 0178	2 0044	4 0261	5 4012	6 1	7 0200	8 0000
✓		AAXX	21 084	✓	4 1 9	00000	1	2 0079	4	5 4000		7 0200	8 0000
✓		AAXX	21 114	✓	3 1 9	00000	1 0138	2 0057	4 0268	5 3008	6 1	7 0200	8 0000

CLOUD (Continued) High				PRESENT WEATHER		WEATHER SINCE
Amt 0–8	Type	Code No.	Direc–tion from	Description	ww Code	Des
56	—	57	58–59	—	60–61	
				CLEAR SKY	02	CLEA
				CLEAR SKY	02	CLEA
				CLEAR SKY	02	CLEA
				CLEAR SKY	02	CLEA
				CLEAR SKY	02	CLEA
				× CLEAR SKY	02	CLEA
				CLEAR SKY	02	CLEA

EVAPORATION Class "A" Pan (mm) ___ hrs to 0900	CUP ANEMOMETER (Over 3 m) (whole units)		MAXIMUM WIND GUST Direction	Speed (Knots)	Time	SUNSHINE (Hours and Tenths)	RIVER HEIGHT 0900 (metres)			
								Hail	Snow	Thu or
30–32	33–36	km miles	37–38	39–41	42–44	45–47	48–51	52	53	
•						•	•			

EVAPORATION (Class "A" Pan) 0900

Water Temperature: Reading Before Touching Max	Min	Reading After Setting Max	Min	Water Added or Removed: Added or Removed (A or R)	Number of Full Measures	Amount in Full Measures	Amount in Partly Full Measures	Total	Rainfall (from Rain Gauge ___ hrs to 09
								MILLIMETRES	
B	C	D	E	F	G x 4 = H		J*	K = H + J	L
					x 4 = •0		•	•	•

*IF WATER REMOVED – Subtract the reading of the partly full measure from 4.

CODED S

5 5 5	2 D_L a' p' p'	3 S K_S D_K /	4 R_o R_m R_m R_m	5 T_x T_x T_n T_n	7 T_g T_g / /	8 N_s C h_s h_s	8 N_s C	
5 5 5	2	3 /	4			8	8	
5 5 5	2 07	3 /	4			8	8	
5 5 5	2 0400	3 /	4			8	8	
5 5 5	2 0400	3 /	4	5 1805	7 / /	8	8	
5 5 5	2 0205	3 /	4			8	8	
5 5 5	2 0400	3 /	4	5 18 / /		8	8	
5 5 5	2 0704	3 /	4			8	8	
5 5 5	2 0701	3 /	4			8	8	

CLOUD

Low – 2nd Layer				Low – 3rd Layer					Middle			
ype	Code No.	Height of Base	Direc–tion from	Amt. 0–8	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Direc–tion from
–	47	48–49	50–51	–	–	–	–	–	52	–	53	54–55

1500 Without touching	TERRESTRIAL MINIMUM THERMOMETER 0900 Before Touching	After Setting (See Note 3)	RAINFALL 24 Hours to 0900 (millimetres)	
–	22–24	–	25–28	29
8 •0	•	•	COC •O	

RESSURE AND CORRECTIONS

0600	0900	1200	1500	1800	2100
3•5	22•5	17•5	9•0	23•0	19•0
04 3	1005·2	1004·7	1003·1	1003·7	1003·8
– 5 0	– 4 9	– 4.4	– 4 3	– 5.0	– 4·3
0•3	1000•5	1000•3	998•8	998•7	999•5
7•3	+27•3	+27•3	+27•3	+27•3	+27•3
26•6	1027•6	1027•6	1026•1	1026•0	1026•8

d	4 P P P P	5 a p p p	6 R R R t_R	7 w w W_1 W_2	8 N_h C_L C_M C_H
	4	5		7	8
	4 0 0 5	5 6 0 0 4	6 1	7 0 2 0 0	8 0 0 0
	4 0 2 2	5 3 0 0 2		7 0 2 0 0	8 0 0 0
	4 0 2 7 6	5 2 0 1 1	6 4	7 0 2 0 0	8 0 0 0 0
	4 0 2 7 6	5 0 0 0 2		7 0 2 0 0	8 0 0 0 0
	4 0 2 6 1	5 7 0 1 2	6 1	7 0 2 0 0	8 0 0 0 0
	4 0 2 6 0	5 4 0 0 0		7 0 2 0 0	8 0 0 0 0
	4 0 2 6 8	5 3 0 0 8	6 1	7 0 2 0 0	8 0 0 0 0

CLOUD (Continued) High				PRESENT WEATHER		WEATHER SINCE LAST OBSERVATION		SOIL TEMP		SEA	RAINFALL			SOIL TEMP		CLOUD
Amt 0–8	Type	Code No.	Direc–tion from	Description	ww Code	Description	ww Code	10 (cm)	20 (cm)	State of Sea and Swell SK_SDK	Progress Total Since Prev. 0900	Amount Since Previous Obs	Total in Last 6 Hours	50 (cm)	100 (cm)	Amount of Sky obscured by Low Cloud 0–8
											(millimetres)					
56	—	57	58–59	—	60–61	—	62–63	64–65	66–67	68–70	—	71–73	—	74–75	76–77	78
											•	•				
				CLEAR SKY	02	CLEAR SKY	02									0
				CLEAR SKY	02	CLEAR SKY	02									0
				CLEAR SKY	02	CLEAR SKY	02									0
				CLEAR SKY	02	CLEAR SKY	02									0
				CLEAR SKY	02	CLEAR SKY	02									0
				× CLEAR SKY	02	CLEAR SKY	02									0
				CLEAR SKY	02	CLEAR SKY	02									0

EVAPORATION Class "A" Pan (mm) ___ hrs to 0900	CUP ANEMOMETER (Over 3 m) (whole units)		MAXIMUM WIND GUST Direction	Speed (Knots)	Time	SUNSHINE (Hours and Tenths)	RIVER HEIGHT 0900 (metres)	PHENOMENA Hail	Snow	Thunderstorm or Thunder heard	Frost	Dust storm (vis. below 1 km)	Mist, Haze or Smoke	Fog (vis. below 1 km)	Strong Wind (mean of 22–33 kt)	Gale (mean of 34 kt or more)
30–32	33–36		37–38	39–41	42–44	45–47	48–51	52	53	54	55	56	57	58	59	60
•		km miles				•	•									

Station Name: BENDIGO

EVAPORATION (Class "A" Pan) 0900

Water Temperature: Reading Before Touching Max	Min	Reading After Setting Max	Min	Water Added or Removed: Added or Removed (A or R)	Number of Full Measures	Amount in Full Measures	Amount in Partly Full Measures	Total	Rainfall (from Rain Gauge) ___ hrs to 0900	Evaporation Cols L + K if A Cols L – K if R ___ hrs to 0900
						MILLIMETRES				
B	C	D	E	F	G x 4 = H	J*	K = H + J	L	M	
					x 4 = •0	•	•	•	•	

*IF WATER REMOVED – Subtract the reading of the partly full measure from 4.0 mm and enter result in Column J.

CUP ANEMOMETER 0900

	Under 3 m	Over 3 m
TODAY'S READING	•	•
YESTERDAY'S READING (subtract)	•	•
Difference during ___ hours	•	•

Date (10–14): 21ST MAY

Day of Week: SATURDAY

Obs. Checked By:

CODED SYNOPTIC REPORTS

5 5 5	2 $D_L a' p' p'$	3 S K_S D_K /	4 $R_o R_m R_m R_m$	5 $T_x T_x T_n T_n$	7 $T_g T_g$ / /	8 $N_s C h_s h_s$	8 $N_s C h_s h_s$	8 $N_s C h_s h_s$	8 $N_s C h_s h_s$	9 $S_p S_p D_a e'$	(77744	PLAIN LANGUAGE	) 44777
5 5 5	2	3 /	4			8	8	8	8	9	(77744		) 44777
5 5 5	2 0 7	3 /	4			8	8	8	8	9	(77744		) 44777
5 5 5	2 0 4 0 0	3 /	4			8	8	8	8	9	(77744		) 44777
5 5 5	2 0 4 0 0	3 /	4	5 1 8 0 5	7 1 1	8	8	8	8	9	(77744		) 44777
5 5 5	2 0 2 0 5	3 /	4			8	8	8	8	9	(77744		) 44777
5 5 5	2 0 4 0 0	3 /	4	5 1 8 1 1		8	8	8	8	9	(77744		) 44777
5 5 5	2 0 7 0 4	3 /	4			8	8	8	8	9	(77744		) 44777
5 5 5	2 0 7 0 1	3 /	4			8	8	8	8	9	(77744		) 44777

CLOUD											Direc-tion from
2nd Layer		Low – 3rd Layer					Middle				
Height of Base	Direc-tion from	Amt. 0–8	Type	Code No.	Height of Base	Direc-tion from	Amt 0–8	Type	Code No.	Direc-tion from	54–55
48–49	50–51	–	–	–	–	–	52	–	53	54–55	
							4	AC	8	–	–
							2	AC	8	–	
							0				
							0				

TERRESTRIAL MINIMUM THERMOMETER		RAINFALL	
0900 Before Touching	After Setting (See Note 3)	24 Hours to 0900 (millimetres)	
22–24	–	25–28	29
•	•	000 •0	

RE AND CORRECTIONS

0900	1200	1500	1800	2100
19•0	18•0	18•0	18•0	18•0
1003•7	1003•3	1001•6	1002•7	1004•7
-4•3	-4•1	-4•1	-4•1	-4•1
999•4	999•2	997•5	998•6	1000•6
27•1	•	+27•3	-27•3	-27•3
227••	•	1024•6	1025•0	1027•9

P P P P	5 a p p p	6 R R R t_R	7 w w W_1 W_2	8 N_h C_L C_M C_H
	5		7	8
	5	6 1	7	8
	5		7	8
0267	5 2013	6 4	7 0300	8 1400
0255	5 1001		7 0312	8 3280
0246	5 3010	6 1	7 0312	8 5021
0259	5 3024		7 0111	8 0000
0279	5 2005	6 1	7 0111	8 0000

CLOUD (Continued)				PRESENT WEATHER		WEATHER SINCE LAST OBSERVATION		SOIL TEMP		SEA	RAINFALL			SOIL TEMP		CLOUD
High																
Amt 0–8	Type	Code No.	Direc-tion from	Description	ww Code	Description	ww Code	10 (cm)	20 (cm)	State of Sea and Swell SK_SDK	Progress Total Since Prev. 0900	Amount Since Previous Obs	Total in Last 6 Hours	50 (cm)	100 (cm)	Amount of Sky obscured by Low Cloud 0–8
56	—	57	58–59	—	60–61	—	62–63	64–65	66–67	68–70	—	71–73 (millimetres)	—	74–75	76–77	78
											•	•				
				CLOUD INC	03	CLOUD INC	03				000•0	000•0	000•0			0
				CLOUD DEC	01	CLOUD DEC	01				000•0	000•0				0
				CLOUD INC	03	CLOUD INC	01				000•0	000•0				1
				CLOUD INC	03	CLOUD INC	03				000•0	000•0				3
				CLOUD INC	08	CLOUD INC	08				000•0	000•0	000•0			5
				CLOUD DEC	01	CLOUD DEC	01				000•0	000•0				0
				UNCHANGED	01	UNCHANGED	01				000•0	000•0	000•0			0

EVAPORATION	CUP ANEMOMETER		MAXIMUM WIND GUST			SUNSHINE	RIVER HEIGHT	PHENOMENA										Station Name
Class "A" Pan (mm) ___hrs to 0900	(Over 3 m) (whole units)		Direction	Speed (Knots)	Time	(Hours and Tenths)	0900 (metres)	Hail	Snow	Thunderstorm or Thunder heard	Frost	Dust storm (vis. below 1 km)	Mist, Haze or Smoke	Fog (vis. below 1 km)	Strong Wind (mean of 22–33 kt)	Gale (mean of 34 kt or more)		
30–32	33–36	km miles	37–38	39–41	42–44	45–47	48–51	52	53	54	55	56	57	58	59	60		BENDIGO
•						•	•											

EVAPORATION (Class "A" Pan) 0900										CUP ANEMOMETER 0900			Date (10–14)
Water Temperature				Water Added or Removed					Rainfall	Evaporation		Under 3 m	Over 3 m	20TH MAY
Reading Before Touching		Reading After Setting		Added or Removed (A or R)	Number of Full Measures	Amount in Full Measures	Amount in Partly Full Measures	Total	(from Rain Gauge) ___hrs to 0900	Cols L + K if A Cols L – K if R ___ hrs to 0900	TODAY'S READING			Day of Week
Max	Min	Max	Min			MILLIMETRES								FRIDAY
B	C	D	E	F	G x 4 = H	J*	K = H + J		L	M	YESTERDAY'S READING (subtract)	•	•	Obs. Checked By
					x 4 = •0	•	•		•	•	Difference during ___ hours	•	•	

*IF WATER REMOVED – Subtract the reading of the partly full measure from 4.0 mm and enter result in Column J.

CODED SYNOPTIC REPORTS

555	2 $D_L a^1 p^1 p^1$	3 S K_S D_K /	4 $R_O R_m R_m R_m$	5 $T_x T_x T_n T_n$	7 $T_g T_g$ / /	8 $N_s C h_s h_s$	8 $N_s C h_s h_s$	8 $N_s C h_s h_s$	8 $N_s C h_s h_s$	9 $S_p S_p D_s e^f$	(77744	PLAIN LANGUAGE	)	44777
555	2	3 /	4			8	8	8	8	9	(77744		)	44777
555	2 [illegible]201	3 /	4			8	8	8	8	9	(77744		)	44777
555	2 0201	3 /	4			8	8	8	8	9	(77744		)	44777
555	2 9205	3 /	4	5 1706	7 11	8	8	8	8	9	(77744		)	44777
555	2 1203	3 /	4			8	8	8	8	9	(77744		)	44777
555	2 9702	3 /	4	5 18 11		8	8	8	8	9	(77744		)	44777
555	2 0208	3 /	4			8	8	8	8	9	(77744		)	44777
555	2 9211	3 /	4			8	8	8	8	9	(77744		)	44777

LOCAL CLOCK TIME	PRESSURE	TEMPERATURE					WIND		VISIBILITY	CLOUD																					
											Low – 1st Layer					Low – 2nd Layer					Low – 3rd Layer					Middle			
	Station Level (Millibars)	Dry Bulb	Wet Bulb	Wet Bulb Depression	Dew Point		Direction (16 points of compass)	Speed (Knots)	(Metres or kilometres)	Total Amt. 0–8	Amt. 0–8.	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Height of Base	Direc–tion from	Amt 0–8	Type	Code No.	Direc–tion from
15–17	18–22	23–26	27–29	—	30–31	–	32–33	34–35	36–38	39	40	–	41	42–43	44–45	46	–	47	48–49	50–51	–	–	–	–	–	52	–	53	54–55
0000	•	•	•	•	•																								
0300	997·7	07·6	07·3	00·3	06·9		SW	02	50	4	0															4	AC	8	–
0600	997·9	06·6	06·5	00·1	06·3		NE	02	50	0	0																		
0900	999·4	09·1	08·6	00·5	08·0		00	00	50	1	1	SC	4	25	–														
1200	999·2	15·0	12·6	02·4	10·5		00	00	50	4	3	Cu	2	30	–											2	AC	8	–
1500	997·5	16·5	13·9	02·6	10·8		00	00	50	5	5	Cu	2	30															
1800	998·6	14·5	12·7	01·8	11·1		00	00	50	0	0															0			
2100	1000·6	10·5	10·0	00·5	09·5		SW	03	50	0	0															0			

REMARKS (Instruments, Exceptional Weather, etc.)	MAXIMUM THERMOMETER				MINIMUM THERMOMETER			TERRESTRIAL MINIMUM THERMOMETER		RAINFALL	
	0900		1500 Without Touching	Before Touching 0900 Tomorrow (See Note 2)	0900		1500 Without Touching	0900 Before Touching	After Setting (See Note 3)	24 Hours to 0900 (millimetres)	
	Before Touching (See Note 1)	After Setting			Before Touching	After Setting					
		—	—	15–18	19–21	—	—	22–24	—	25–28	29
	16·7	09·0	18·0	18·0	06·1	08·6	08·2	•	•	000·0	

Note 1 – Also enter this reading in Col 15–18 on previous page.

Note 2 – Enter in this column the Maximum Thermometer reading taken before touching 0900 tomorrow.

Note 3 – Expose as late as possible before sunset. Read after exposure.

REMOTE SENSORS

Local Time	DB	WBD
0900		
1500		

PRESSURE AND CORRECTIONS

Time			0000	0300	0600	0900	1200	1500	1800	2100
Attached Thermometer			•	18·5	24·0	19·0	18·0	18·0	18·0	18·0
Barometer as read				1001·9	1003·0	1003·7	1003·2	1001·6	1002·7	1004·7
Corrections	For Station Level			−4·2	−5·1	−4·3	−4·1	−4·1	−4·1	−4·1
		SL (mb)	•	997·7	997·9	999·4	999·2	997·5	998·6	1000·6
	For MSL		•	+27·3	+27·3	+27·3	+27·3	+27·1	+27·3	+27·3
Mean Sea Level (mb)			•	1025·0	1025·2	1026·7	1026·5	1024·6	1025·9	1027·9

CODED SYNOPTIC REPORTS

STATION NAME															
	AAXX	Y Y G G i_w	I I i i i	i_R i_x h V V	N d d f f	1 s_n T T T	2 s_n T_d T_d T_d	4 P P P P	5 a p p p	6 R R R t_R	7 w w W_1 W_2	8 N_h C_L C_M C_H			
	AAXX			1		1	2	4	5		7	8			
BENDIGO	AAXX	19174	94855	1		1	2	4	5	6 1	7	8			
✓	AAXX	19204	✓	4		1	2	4	5		7	8			
✓	AAXX	19234	✓	3 1 5 9 0	10000	10091	2 0080	4 0267	5 2013	6 4	7 0300	8 1400			
✓	AAXX	20024	✓	4 1 5 9		1	2	4	5		7	8			
✓	AAXX	20054	✓	3 1 5 9 9	50000	10165	2 0108	4 0246	5 3010	6 1	7 0312	8 58 //			
✓	AAXX	20084	✓	4 1 9 9		1	2	4	5		7 0111	8 0000			
✓	AAXX	20114	✓	3 1 9 9 9	02303	10105	2 0095	4 0279	5 2005	6 1	7 0111	8 0000			

Direc–tion from
54–55
–
• 0
7
7
• 6
• 3
• 9
M C H
0
20
0
//
0
0

CLOUD (Continued)				PRESENT WEATHER		WEATHER SIN
High						
Amt 0–8	Type	Code No.	Direc–tion from	Description	ww Code	
56	—	57	58–59	—	60–61	
				CLOUD INC	03	CLO
				CLOUD DEC	01	CLO
				CLOUD INC	03	CLO
				CLOUD INC	03	CLO
				CLOUD INC	03	CLO
				CLOUD DEC	01	CLO
				UNCHANGED	01	UNC

EVAPORATION	CUP ANEMOMETER		MAXIMUM WIND GUST			SUNSHINE	RIVER HEIGHT		
Class "A" Pan (mm) hrs to 0900	(Over 3 m) (whole units)		Direction	Speed (Knots)	Time	(Hours and Tenths)	0900 (metres)	Hail	Snow
30–32	33–36	-	37–38	39–41	42–44	45–47	48–51	52	53
•		km miles				•	•		

EVAPORATION (Class "A" Pan) 0900

Water Temperature				Water Added or Removed					Rainfa
Reading Before Touching		Reading After Setting		Added or Removed (A or R)	Number of Full Measures	Amount in Full Measures	Amount in Partly Full Measures	Total	(from Rain Gau hrs to
Max	Min	Max	Min			MILLIMETRES			
B	C	D	E	F	G x 4 = H		J*	K = H + J	L
					x 4 = • 0		•	•	•

*IF WATER REMOVED – Subtract the reading of the partly full measure from

CODED

5 5 5	2 $D_L a' p' p'$	3 S K_S D_K /	4 R_c R_m R_m R_m	5 T_x T_x T_n T_n	7 T_g T_g / /	8 N_s C h_s h_s	8 N_s
5 5 5	2	3 /	4			8	8
5 5 5	2 9801	3 /	4			8	8
5 5 5	2 0201	3 /	4			8	8
5 5 5	2 9205	3 /	4			8	8
5 5 5	2 1203	3 /	4	5 1706	7 //	8	8
5 5 5	2 9703	3 /	4	5 18 //		8	8
5 5 5	2 0208	3 /	4			8	8
5 5 5	2 9211	3 /	4			8	8

PARAMETERS ARE FOR TIMES OF CLOSEST APPROACH IN CIVIL TIME (GMT +10 HRS 0 MINS).
ONLY VISIBLE PASSES ABOVE 10.0 DEG ELEVATION ARE SHOWN.
-,+ SIGNIFY NOT VISIBLE AT TIME OF CLOSEST APPROACH, BUT VISIBLE FOR SOME OF PASS BEFORE OR AFTER.

DATE	CODE	TIME OF CLOSEST APPROACH	AZIMUTH	ELEVATION	SAT. HEADING
20 JUN 83	E	043835(0)+	331	22	65
	F	065525(0)	68	14	151
	P	051150(0)+	255	33	170
	N	053305(1) 175720(0) 193445(0)	95 86 252	70 33 17	8 172 171
	R	173805(0)	249	12	171
	Z	183420(1)	355	71	93
21 JUN 83	C	181525(0) 195245(0)-	141 305	29 27	48 40
	D	012050(0)-	247	46	356
	J	175835(0)	338	13	67
	P	051125(0)+	254	29	170
	N	054030(1) 180445(0) 194220(0)	277 85 250	74 51 11	8 172 171
	T	181720(0)	307	11	44
	Z	232650(0)	300	25	70
22 JUN 83	C	174300(0) 192030(0)	144 307	24 35	49 40
	D	011640(0)-	247	45	356
	F	174230(0)	292	15	28
	N	054755(0)+ 181210(1)	275 80	45 81	8 172
	T	174445(0)	309	13	45
	Z	220000(0)	317	45	73
23 JUN 83	C	184810(0)	307	47	41
	D	011230(0)-	247	45	356
	E	202015(0)-	29	22	115
	F	061205(0)	68	16	151
	N	055520(0)+ 181940(0)	274 257	29 64	8 172
	Z	202820(0)	333	62	78
24 JUN 83	C	181550(0)	309	64	42
	D	010815(0)-	246	45	356
	F	063045(0)	64	42	150
	N	042530(0)+ 182705(0)	104 259	26 40	9 172
	Z	184750(1)	348	71	87
25 JUN 83	C	174330(1)	340	86	43
	D	010400(0)-	247	44	356
	E	184925(0)	34	14	118
	F	064930(0)	241	66	148
	N	183435(0)	256	26	172
	Z	233440(0)	295	20	69
26 JUN 83	D	005940(0)-	247	44	356
	E	194850(0)-	23	33	110
	F	052840(0) 070830(0)-	67 231	19 25	151 146
	N	184210(0)	253	18	171
	Z	220720(0)	310	40	71
27 JUN 83	C	181535(0)	301	13	38
	D	005515(0)-	246	44	356

BALLARAT COURIER

MON 23 MAY

Lights in the sky again at Bendigo

BENDIGO. Strange lights in the sky were spotted over the Bendigo area last night for the third night in a row, a local radio station announcer said. Mike Evans of station 3BO said he had four calls from listeners between 6 pm and 7.50 pm claiming to have sighted UFOs.

One caller reported watching a mysterious light for half an hour. Mr Evans said the descriptions matched those of the last two nights — a conical shaped object with a white light on top and red and green flashing lights beneath.

He said he had friends standing by with telescopes and cameras to find out if the lights were more than distorted aircraft navigation lights, as has been suggested. Mr Evans said most of the sightings occurred on Friday night when he said he saw six objects through the 3BO studio windows.

An Air Traffic Control spokesman said no unidentified craft have been picked up on radar screens and no sightings have been reported by the 20 or so light aircraft that flew over Bendigo last night. — AAP

TUES 24 MAY

Mystery lights

Reported sightings of mysterious lights over central Victoria are to be checked out by a Royal Australian Air Force officer today. RAAF Command Intelligence Officer Brett Biddington said yesterday he would go to Bendigo to investigate them.

VISIBLE SATELLITE PREDICTION SERVICE
DEPARTMENT OF SCIENCE AND TECHNOLOGY

CANBERRA A.C.T.

VISIBLE SATELLITE PASSES BULLETIN

****

FOR MONTH OF JUNE 1983

PREDICTIONS ARE PROVIDED FOR THE FOLLOWING HIGHLY LUMINOUS SATELLITES WHOSE PARAMETERS AS LISTED, ARE CORRECT AT PRESENT DATE.

SATELLITE NAME	DESIGNATION	CODE	MAG	PERIOD MINS	INCLINATION DEGREES	APOGEE KM	PERIGEE KM
SALYUT-7	1982 33 A	B	4	91.2	51.6	339.7	328.3
COSMOS 15*	1967 027 B.	C	4	94.0	56.1	477.8	463.2
COS-B ROCKET	1975 72 B	D	0	130.7	89.2	3979.4	328.4
OAO-A2 ROCKET	1968 110 B	E	4	99.8	35.0	792.2	706.2
COSMOS 185 ROCKET	1967 104 B	F	4	97.2	64.1	800.5	450.5
OAO-A3 ROCKET	1972 65 B	J	0	99.1	35.0	1088.0	346.7
EXPLORER 31 FRAGME	1965 98 C	P	4	119.9	79.8	2850.8	506.1
COSMOS 1116 ROCKET	1979 67 B	N	4	96.4	81.2	630.4	549.1
COSMOS 975 ROCKET	1978 004 B	R	4	96.9	81.2	652.6	570.2
COSMOS 1043 ROCKET	1978 094 B	S	4	96.5	81.2	635.7	552.8
ARYABHATA (INDIA)	1975 33 B	T	4	93.9	50.7	486.4	451.1
SEASAT	1978 064 A	V	3	100.5	108.0	783.2	780.8
COSMOS 1174	1980 30 A	Y	4	104.7	66.1	1580.2	383.6
FLTSATCOM 3 ROCKET	1980 4 B	Z	4	342.7	26.0	19486.4	205.5
COSMOS 893	1977 011 A	AA	4	95.0	73.9	742.0	295.4

NOTES
*****

1. THESE PREDICTIONS ARE COMPUTED FROM INFORMATION SUPPLIED BY GODDARD SPACE FLIGHT CENTRE OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION U.S.A. (CAUTION. DATA EMPLOYED ARE ONE OR TWO WEEKS OLD BY THE DATE FOR WHICH PREDICTIONS ARE MADE. THEREFORE PREDICTED TIMES OF PASSES ARE UNRELIABLE IF ORBITAL HEIGHTS HAVE BEEN ALTERED BY SATELLITE MANOEUVRES,AS WITH MANNED FLIGHTS.) ALSO SATELLITES IN LOW ORBIT MAY EXPERIENCE CHANGES IN ATMOSPHERIC DRAG WHICH COULD RESULT IN A SIGNIFICANT VARIATION BETWEEN THE ACTUAL AND PREDICTED PASSES.

2. THE SATELLITES SELECTED ARE LONG-LIVED AND OF OPTIMUM VISIBLE MAGNITUDE. OTHER BRIGHT OBJECTS SEEN COULD BE SHORT-LIVED SATELLITES OR ROCKET STAGES, EITHER RECENTLY LAUNCHED OR ELSE DECAYING OBJECTS RENDERED INCANDESCENT AS THEY RE-ENTER THE ATMOSPHERE. OTHERS AGAIN COULD BE METEORS.

3. A PASS IS INCLUDED IN THE PREDICTIONS WHEN -

   (A) THE SATELLITE IS ILLUMINATED BY THE SUN,
   (B) DURING THE PASS, THE SATELLITE RISES AT LEAST 10 DEGREES ABOVE THE HORIZON, AND
   (C) THE PASS OCCURS BEFORE CIVIL TWILIGHT FOR MORNING PASSES AND AFTER CIVIL TWILIGHT FOR EVENING PASSES.
   (D) NUMERALS IN BRACKETS AGAINST PREDICTED TIME INDICATE VISIBILITY ON A SCALE OF 0 TO 3. (3) INDICATES THAT THE SATELLITE SHOULD BE EASILY VISIBLE. (0) INDICATES THAT SOME DIFFICULTY MAY BE EXPERIENCED DEPENDING UPON VIEWING CIRCUMSTANCES.
   (E) A MINUS SIGN AFTER THE TIME INDICATES THAT THE SATELLITE IS NOT ILLUMINATED AT THE STATED TIME OF MAXIMUM ELEVATION BUT IS VISIBLE EARLIER. A PLUS SIGN INDICATES THAT VISIBILITY OCCURS ONLY AFTER THE STATED TIME OF MAXIMUM ELEVATION.

OC 33
Revised Feb 81

Department of Defence
MESSAGE FORM

NOTE: Shaded areas are for COMMCEN/SIGS use only

LINE 1

LINE 2

SECURITY CLASSIFICATION AND SPECIAL HANDLING INSTRUCTIONS

UNCLASSIFIED

LINE 3

LINE 4

LINE 5

PRECEDENCE – ACTION	PRECEDENCE – INFO ROUTINE	DATE – TIME GROUP	MESSAGE INSTRUCTIONS

ROUTINE INDICATORS

NOTE: Write only one addressee per line

FROM HQSC COFS

TO DEFAIR CANBERRA

FOR DGOPS-AF, DAFIS

UNUSUAL AERIAL SIGHTINGS BENDIGO VIC 20-22 MAY -

INTERIM REPORT OF INVESTIGATING OFFICER

SIG/ORIG NO

SIG ADA

015/CINTO

GR

1. IN RESPONSE TO A TELEPHONE DISCUSSION BETWEEN DGOPS-AF AND COFS HQSC ON 26MAY83, THE FOLLOWING INTERIM REPORT ON THE UNUSUAL AERIAL SIGHTINGS REPORTED IN THE BENDIGO AREA OF VICTORIA BETWEEN 20-22 MAY HAS BEEN PREPARED BY THE INVESTIGATING OFFICER AND IS FORWARDED FOR YOUR CONSIDERATION.

BACKGROUND

2. ON NIGHTS OF 20-21 AND 21-22 MAY MANY PEOPLE, ESTIMATED TO NUMBER IN HUNDREDS, SAW UNUSUAL LIGHTS IN THE SKIES OVER BENDIGO AND ENVIRONS. SIGHTINGS ALSO WERE MADE IN THE SHEPPARTON AREA, AT EILDON, BALLARAT AND AS FAR SOUTH WEST AS WARRNAMBOOL.

3. INITIAL REPORTS, DIRECT TO THE RAAF, AND TO OTHER AGENCIES, SUCH AS RADIO STATIONS AND NEWSPAPERS, WERE HIGHLY CONSISTENT. INVARIABLY THE SIGHTINGS WERE OF BRIGHT WHITE LIGHTS WITH SMALLER RED AND GREEN LIGHTS (OTHERS REPORTED BLUE AS WELL) ADJACENT. THE LIGHTS APPEARED TO BE SPINNING OR ROTATING RAPIDLY. IN THE BENDIGO AREA A NUMBER OF PEOPLE REPORTED OBSERVING UPTO NINE LIGHTS SIMULTANEOUSLY IN VARIOUS PARTS OF THE SKY. THE LIGHTS WERE MOSTLY STATIONERY AND VISIBLE IN MOST CASES FOR LONG PERIODS OF TIME - UPTO THREE OR FOUR HOURS.

RAAF RESPONSE

4. IN VIEW OF THE NUMBER OF SIGHTINGS AND THE MEDIA INTEREST THEY ATTRACTED, ARRANGEMENTS WERE MADE FOR CINTO TO VISIT BENDIGO ON TUE 24 MAY.

VISIT TO BENDIGO

5. IN BENDIGO, CINTO:

PAGE NO	DRAFTER'S NAME AND TITLE	PHONE NO	REF FILE NO
ONE			5/6/1/AIR(41)
NO OF PAGES	RELEASER'S NAME AND TITLE	SIGNATURE	DATE
FIVE			

FOR OPS USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR	SECURITY CLASSIFICATION
											UNCLASSIFIED

Stock No 7530-66-094-6819

Revised Feb-81 | MESSAGE FORM | NOTE: Shaded areas are for COMMCEN/SIGS use only.

LINE 1

LINE 2

LINE 3

LINE 4

LINE 5

SECURITY CLASSIFICATION AND SPECIAL HANDLING INSTRUCTIONS: UNCLASSIFIED

PRECEDENCE – ACTION	PRECEDENCE – INFO ROUTINE	DATE – TIME GROUP	MESSAGE INSTRUCTIONS

ROUTINE INDICATORS

NOTE: Write only one addressee per line

FROM

TO

SIG/ORIG NO

GR

A. INTERVIEWED THREE WITNESSES,

B. OBTAINED PHOTOCOPIES OF THE THREE-HOURLY METEOROLOGICAL OBSERVATIONS MADE AT THE BENDIGO [illegible], AND

C. GAVE PRESS AND MEDIA INTERVIEWS.

FILM OF SIGHTING

6. MR EVANS HANDED THE ORIGINAL NEGATIVES OF HIS SIGHTINGS TO CINTO. SUBSEQUENTLY THIS FILM HAS BEEN REPRODUCED BY CPE AND THE ORIGINAL PLUS DUPLICATE NEGATIVES AND PRINTS HAVE BEEN RETURNED TO MR EVANS BY REGISTERED POST. PRINTS ARE BEING FORWARDED TO DAFIS.

RESULTS OF VISIT

7. THE VISIT PRODUCED EVIDENCE:

A. OF SOME RADIO DUCTING, AND

B. THAT THE LIGHTS WERE DISTANT.

8. PUBLICITY GIVEN TO CINTO'S VISIT CAUSED ABOUT 100 PEOPLE TO CONTACT HQSC (MAINLY CINTO AND PRO) ON WED AND THU WITH REPORTS OF SIGHTINGS. MANY CALLS WERE FROM THE BENDIGO AREA AND RELATED TO THE LIGHTS OF THE PREVIOUS WEEKEND. IN ALMOST ALL CASES THE CALLERS REQUESTED A COPY OF THE STANDARD QUESTIONNAIRE. THESE HAVE BEEN DISPATCHED AND RETURNS ARE BEGINNING TO ARRIVE AT HQSC.

METEOROLOGICAL CONDITIONS

9. THE WEATHER IN BENDIGO ON THE NIGHTS OF 20-21 AND 21-22 MAY WAS FINE, STILL, COOL AND CLEAR. ALTHOUGH METEOROLOGICAL RECORDS ARE NOT CONCLUSIVE (RADIOSONDS FROM WHICH AEROLOGICAL DIAGRAMS ARE PRODUCED ARE ONLY MADE IN VICTORIA AT LAVERTON) FROM THE KNOWN DATA IT IS NOT

PAGE NO	DRAFTER'S NAME AND TITLE	PHONE NO	REF FILE NO
TWO			

NO OF PAGES	RELEASER'S NAME AND TITLE	SIGNATURE	DATE
FIVE			

FOR OPS USE		DATE	TIME	SYSTEM	OPERATOR		DATE	TIME	SYSTEM	OPERATOR	SECURITY CLASSIFICATION
	R					D					UNCLASSIFIED

Stock No 7530-66-094-6819

OC 33
Revised Feb 81

Department of Defence
MESSAGE FORM

NOTE: Shaded areas are for COMMCEN/SIGS use only.

LINE 1

LINE 2

SECURITY CLASSIFICATION AND SPECIAL HANDLING INSTRUCTIONS

UNCLASSIFIED

LINE 3

LINE 4

LINE 5

PRECEDENCE – ACTION	PRECEDENCE – INFO ROUTINE	DATE – TIME GROUP	MESSAGE INSTRUCTIONS

ROUTINE INDICATORS

NOTE: Write only one addressee per line

FROM

TO

SIG/ORIG NO

GR

UNREASONABLE TO CONCLUDE THAT THERE MAY HAVE BEEN INVERSIONS IN THE BENDIGO AREA ON THE NIGHTS OF 20-21 AND 21-22 MAY.

AIR MOVEMENTS/RADAR

10. SMACO TULLAMARINE HAS ADVISED THAT AIR ACTIVITY IN THE BENDIGO AREA DURING THE TIMES OF THE SIGHTINGS WAS VARIED AND LIMITED. NO SPURIOUS OR UNACCOUNTED FOR RADAR 'PAINTS' FROM THE BENDIGO AREA WERE RECORDED DURING THE TIMES OF INTEREST.

PLANETS STARS AND SATELLITES

11. TO DATE, MOVEMENTS OF PLANETS, STARS AND SATELLITES HAVE NOT BEEN PLOTTED PENDING THE RETURN AND CORRELATION OF COMPLETED QUESTIONNAIRES FROM THE BENDIGO AREA. CINTO IS TO MEET THE PUBLIC ASTRONOMER FOR VICTORIA TOMORROW.

LASER LIGHTS

12. ANONYMOUS CALLERS TO THE RAAF, CHANNEL 7 AND A MELBOURNE RADIO STATION HAVE CLAIMED THAT THE LIGHTS WERE CAUSED BY A ROCK GROUP EXPERIMENTING WITH LASER LIGHTING. CINTO HAS BEEN UNABLE TO PROVE OR DISPROVE THIS CLAIM.

FURTHER IMAGERY

13. FURTHER, POSSIBLY BETTER QUALITY IMAGERY THAN THAT ORIGINALLY OBTAINED BY THE RAAF IS KNOWN TO EXIST IN BENDIGO. THE PHOTOGRAPHER HAS INDICATED BY PHONE HIS WILLINGNESS TO MAKE THIS FILM AVAILABLE TO THE RAAF.

PAGE NO	DRAFTER'S NAME AND TITLE	PHONE NO	REF FILE NO
THREE			

NO OF PAGES	RELEASER'S NAME AND TITLE	SIGNATURE	DATE
FIVE			

FOR OPS USE	R	DATE	TIME	SYSTEM	OPERATOR	D	DATE	TIME	SYSTEM	OPERATOR	SECURITY CLASSIFICATION

Stock No 7530-66-094-6819

OC 33
Revised Feb 81

Department of Defence
MESSAGE FORM

NOTE: Shaded areas are for COMMCEN/SIGS use only.

LINE 1

LINE 2

SECURITY CLASSIFICATION AND SPECIAL HANDLING INSTRUCTIONS

UNCLASSIFIED

LINE 3

LINE 4

LINE 5

PRECEDENCE – ACTION	PRECEDENCE – INFO ROUTINE	DATE – TIME GROUP	MESSAGE INSTRUCTIONS

ROUTINE INDICATORS

NOTE: Write only one addressee per line

FROM

TO

SIG/ORIG NO

GR

COMPARISON WITH MELBOURNE SIGHTINGS

14. ON THE NIGHT OF 24-25 MAY, MANY PEOPLE IN THE MELBOURNE AREA REPORTED TO THE RAAF AND TO OTHER AGENCIES UNUSUAL LIGHTS MAINLY IN THE WESTERN AND SOUTH WESTERN SKIES. INVARIABLY REPORTS MENTIONED ONE MAIN LIGHT WHICH WAS WHITE, PULSATING WITH SMALLER ASSOCIATED GREEN AND RED LIGHTS. CHANNEL 7 MADE A VIDEO-TAPE OF THIS SIGHTING. CHECKS WITH THE BUREAU OF METEOROLOGY, WITH THE SCIENCE MUSEUM, AND WITH SMACO AT TULLAMARINE LED CINTO TO CONCLUDE THAT IN ALL PROBABILITY THE MAIN SIGHTINGS WAS OF THE STAR CANOPUS BEING VIEWED THROUGH AN INVERSION LAYER. ALTHOUGH THE DESCRIPTIONS OF THE MELBOURNE AND THE BENDIGO LIGHTS ARE SIMILAR, MOST PEOPLE IN MELBOURNE REPORTED ONLY ONE LIGHT, WHEREAS IN BENDIGO MANY PEOPLE REPORTED A NUMBER OF LIGHTS.

NATIONAL SECURITY

15. CINTO HAS BEEN UNABLE TO DISCOVER ANY EVIDENCE TO DATE WHICH SUGGESTS THAT THE LIGHTS OBSERVED AT BENDIGO REPRESENT IN ANY WAY A THREAT TO NATIONAL SECURITY. NO UNUSUAL MARKINGS ON THE GROUND HAVE BEEN REPORTED AND NO REPORTS ASSOCIATING INJURY OR DAMAGE TO PEOPLE, STOCK OR PROPERTY WITH THE APPEARANCE OF THE LIGHTS HAVE BEEN RECEIVED.

CONCLUSIONS

16. AT THIS STAGE THESE ARE TENTATIVE BUT REFLECT ESTIMATES BASED ON INFORMATION AVAILABLE: ON THE EVIDENCE SO FAR AVAILABLE

A. THE LIGHTS APPEAR TO REPRESENT NO THREAT TO NATIONAL SECURITY.

B. THE LIGHTS DO NOT SEEM TO HAVE BEEN PROJECTED BY A FLYING

PAGE NO FOUR	DRAFTER'S NAME AND TITLE	PHONE NO	REF FILE NO
NO OF PAGES FIVE	RELEASER'S NAME AND TITLE	SIGNATURE	DATE

FOR OPS USE		DATE	TIME	SYSTEM	OPERATOR		DATE	TIME	SYSTEM	OPERATOR	SECURITY CLASSIFICATION
	R					D					

Stock No 7530-66-094-6819

OC 33
Revised Feb 81

Department of Defence
MESSAGE FORM

NOTE: Shaded areas are for COMMCEN/SIGS use only.

LINE 1
LINE 2
LINE 3
LINE 4
LINE 5

SECURITY CLASSIFICATION AND SPECIAL HANDLING INSTRUCTIONS: UNCLASSIFIED

PRECEDENCE – ACTION	PRECEDENCE – INFO ROUTINE	DATE – TIME GROUP	MESSAGE INSTRUCTIONS

ROUTINE INDICATORS

NOTE: Write only one addressee per line

FROM

TO

SIG/ORIG NO

GR

OBJECT BECAUSE NO UNUSUAL RADAR RETURNS WERE DETECTED BY MELBOURNE RADAR.

C. THE LIGHT SOURCE(S) ARE EITHER LAND BASED (EG, TRAIN HEADLIGHTS, POSSIBLY LASERS) OR FROM SPACE (PLANETS AND STARS). THE LIGHTS HAVE BEEN UNUSUAL BECAUSE OF THE UNUSUAL ATMOSPHERICS THAT PROBABLY EXISTED IN THE BENDIGO AREA ON THE NIGHTS THE SIGHTINGS WERE MADE.

17. THIS HQ SEEKS YOUR CONCURRENCE TO:

A. HAVE CINTO MAKE A SECOND TRIP TO BENDIGO IN THE NEAR FUTURE TO COLLECT THE NEW FILM AND TO INTERVIEW OTHER WITNESSES ~~WHOSE QUESTIONNAIRE RESPONSES PROVIDE LEADS WORTHY OF FURTHER INVESTIGATION~~, AND

B. RELEASE THE EDITED CONTENTS OF THIS INTERIM REPORT THROUGH THE PUBLIC RELATIONS OFFICE TO THE PRESS.

18 THIS MESSAGE HAS BEEN SIGHTED BY A/COFS AND AOTC.

B AS NO UNUSUAL RETURNS WERE DETECTED BY MELBOURNE RADAR, ~~THE~~ IT IS CONSIDERED UNLIKELY THAT THE LIGHTS WERE PROJECTED BY OR FROM AN ~~EXTR~~ AIRBORNE PLATFORM SUCH AS AN AEROPLANE

PAGE NO	DRAFTER'S NAME AND TITLE	PHONE NO	REF FILE NO
FIVE	B. BIDDINGTON CINTO	3778	5/6/1/AIR

NO OF PAGES	RELEASER'S NAME AND TITLE	SIGNATURE	DATE
FIVE	T.R. GORDON AOT/C	AIRCDRE	31MAY83

FOR OPS USE		DATE	TIME	SYSTEM	OPERATOR		DATE	TIME	SYSTEM	OPERATOR	SECURITY CLASSIFICATION
	R					D					

Stock No 7530-66-094-6819

L. LEVEL INVERSION MELB

DATA INCOMPLETE BENDIGO

BUT WEATHER CONDITIONS ACROSS STATE WERE SIMILAR

∴ NOT UNREASONABLE TO CONCLUDE THAT L LEVEL INVERSIONS MAY HAVE EXISTED IN

"I don't believe it!"

AUSTRALIAN SKEPTICS SPEAK OUT

By BARRY WILLIAMS
Chairman NSW Branch of AS

Read your stars lately? Studied your bio-rhythms? Visited a clairvoyant? Of course you haven't. The fact that you read *Laboratory News* suggests that you are sufficiently in touch with reality to be able to distinguish science from pseudo-science, fact from fantasy. Doesn't it?

Perhaps, but an awful lot of people do consult astrologers and numerologists, visit seers, read von Daniken, sit under pyramids, belong to fringe cults, consult psychic surgeons, and believe in UFOs, Velikovsky's cosmic theories and Tutankhamen's curse. Did you know that in the USA, there are approximately 2000 professional astronomers but over 200,000 astrologers?

You may recall the case of Uri Geller, the famous psychic spoon-bender. This man was the subject of serious scientific research, and succeeded in convincing quite a few professional scientists of his abilities. It was a professional stage magician, James Randi, who finally exposed Geller as employing prestidigitational rather than paranormal skills. Randi will be best remembered by Australians as the man who caused an apoplectic reaction in a TV talk show host when he debunked a well known seer, and for his involvement, with Dick Smith, in testing the abilities of water diviners.

It may seem odd that a professional magician can succeed in exposing psychic trickery, when trained scientists are sometimes convinced. This does not necessarily follow when you consider that scientists generally deal with matter and forces that do not deliberately cheat, while magicians use illusion and trickery as the tools of their trade. This is not to suggest that all psychics are deliberate frauds. Indeed many are obviously sincere in their beliefs, but in cases where these beliefs directly contravene well established natural laws a great deal of scepticism is called for.

That a significant proportion of the population believes in at least some of a wide range of allegedly paranormal phenomena seems incontestable, and in truth, who can blame them. The popular media promulgate the opinions of various astrologers, UFOlogists, numerologists, pyramidiots and seers without a trace of the critical scrutiny they would apply to a political story. Readers may well recall that the world did not end on March 10, despite the well publicized "Jupiter Effect".

Add to this the plethora of books on the occult and other irrational theories that far outnumber scientific books in any bookshop and it can be seen that a great deal of misinformation is being fed to the public. Are you aware that Eric von Daniken's magnum opus "Chariots of the Gods?" ranks as the second highest selling "non-fiction" book of the past decade?

The UFO phenomenon represents a classic case of vast expenditure of effort for no discernible result. It is all too often forgotten that the U in UFO represents "unidentified", and that it means what it says. It certainly does not mean extra-terrestrial (although of course, the most commonly reported UFO is certainly extraterrestrial — the planet Venus). Despite the enormous amount of UFO sightings since WW II, not one artifact has been found, nor one verifiable piece of evidence has been produced to suggest other than a natural explanation. Unless of course you believe the UFOlogists' claims of a worldwide governmental cover-up "to keep the truth from the people". A curious claim when one considers the proneness of all other government secrets to massive leakage.

A similar Catch-22 exists in any serious study of the more esoteric areas of psychic phenomena, such as clair-voyance, psycho-kinesis, telepathy and others under the general heading of extra sensory perception (ESP) or psi. It has been noticed that ESP ability is exercised in inverse proportion to the rigidity of the protocols employed in its testing. It is claimed that ESP exhibits a "shyness" effect in the presence of scepticism. All very understandable really — if quarks can have charm, truth and beauty, why can't psi be shy?

"So what?" you may say "It is all pretty harmless". Maybe, but consider a few "what ifs". What if someone near to you contracted a serious malady. Would you prefer to trust medical science or psychic surgery? What if the government, or the management of your company or the head of your laboratory had to have a horoscope cast before making vital decisions? (Only cynics will reply that it could only be a change for the better.) What if Australian education departments followed the lead of some American states and required that "creation science" be given equal weighting in biology curricula with evolution theory? Would you like to work with a "scientist" who believed that the universe was only 6000 years old and that the speed of light is diminishing? Or a devotee of clairvoyance, which denies causality; or a believer in psycho-kinesis, who denies the law of the conservation of energy; or a levitator who denies the same law, as well as gravity?

These beliefs are not just harmless theories, they are totally irrational and they attack the fundamental natural laws upon which all our understanding of the universe is based.

Maybe you should be worried. More people know their star sign than have ever heard of a quasar. This irrational trend caused a group of individuals in the USA to form a body known as the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP). An Australian section of CSICOP has been formed under the title Australian Skeptics, with the aim of investigating paranormal claims and promulgating our findings to the widest possible audience, in an endeavour to alert people to the intellectual rip-offs that all too often go unchallenged.

We are seeking new members and subscribers to our quarterly newsletter "the Skeptic", Subscriptions are $6 per annum (you couldn't have your palm read for that). If interested please contact Australian Skeptics, GPO Box 1555P, Melbourne

RUSSELL HENTHORN SIGHTING BENDIGO 24 MAY 83

PHOTOGRAPHY DETAILS

CAMERA: Fujico STX-1 Cable shutter release used

LENS: KIMUNAR 500M

CONVERTER: HANIMEX 2X

FILM: Fujicolor 35mm colour print film

F No constant for all frames : F8

ORIGINAL FRAME NO	PRINT NO	APPROX TIME (START OF EXPOSURE) 24 MAY 83	LENGTH OF EXPOSURE
3	1	2058	15 sec
4	2	2058.30	10 sec
5	3	2100	8 mins
6	4	2109	10 mins
7	5	2119	20 sec
8	6	2120	10 min
9	7	2133	7 min

Frame 10, a 20 second exposure taken at 2140 hrs, did not produce an image.

During the photography sequence Mr Henthorn recentred the light for the middle of the focussing screen of his camera at the beginning of each exposure. This involved moving his camera downwards and to the left. For all frames the camera was kept horizontal. Mr Henthorn has advised that the camera was moved inadvertantly short after the shutter was opened for the exposure of frame 9.

RUSSELL HENTHORN SIGHTING BENDIGO 24 MAY 83

PHOTOGRAPHY DETAILS

CAMERA: Fujico STX-1 Cable shutter release used

LENS: KIMUNAR 500M

CONVERTER: HANIMEX 2X

FILM: Fujicolor 35mm colour print film

F No constant for all frames : F8

ORIGINAL FRAME NO	PRINT NO	APPROX TIME (START OF EXPOSURE) 24 MAY 83	LENGTH OF EXPOSURE
3	1	2058	15 sec
4	2	2058.30	10 sec
5	3	2100	8 mins
6	4	2109	10 mins
7	5	2119	20 sec
8	6	2120	10 min
9	7	2133	7 min

Frame 10, a 20 second exposure taken at 2140 hrs, did not produce an image.

During the photography sequence Mr Henthorn recentred the light for 10 the middle of the focussing screen of his camera at the beginning of each exposure. This involved moving his camera downwards and to the left. For all frames the camera was kept horizontal. Mr Henthorn has advised that the camera was moved inadvertantly short after the shutter was opened for the exposure of frame 9.

FRAME 10A-11

GR 1 PAPER: EXP 60 SEC @ f 2.8 X20 MAG
PRINTED FOR MAXIMUM DETAIL.
THIS ONE APPEARS TO BE THE SHARPEST IMAGE. DEFINITE PATTERN APPEARS IN THIS PRINT.

FRAME 9A-10
AS FOR FRAME 10A-11 EXCEPT OUT of FOCUS.

FRAME 7A-8
AS FOR FRAME 10A-11 EXCEPT OUT of FOCUS.
A SHORTER FOCAL LENGTH APPEARS TO HAVE BE USED ON THIS FRAME.

FRAME 6A-7
AS FOR FRAME 10A-11 EXCEPT OUT of FOCUS.
DOES NOT APPEAR TO BE SAME OBJECT. AS OTHER FRAMES.

FRAMES 11A-12 & 12A-13 APPEAR TO BE THE MOON
OUT of FOCUS

TWO (2) OTHER FRAMES APPEAR TO HAVE A VERY SMALL IMAGE BUT UNABLE TO PRINT THEM.

IMAGE SIZE ON FRAME 10A-11 IS 3mm.

Frame 10A-11

GR 1 Paper: Exp 60 sec @ f 2.8 x 20 Mag printed for maximum detail. This one appears to be the sharpest image. Definite pattern appears in this print.

Frame 9A-10

As for Frame 10A-11 except out of focus.

Frame 7A-8

As for Frame 10A-11 except out of focus.
A shorter focal length appears to have been used on this Frame.

Frame 6A-7

As for Frame 10A-11 except out of focus.
Does not appear to be same object as other Frames.

Frames 11A-12 and 12A-13

Appear to be the moon out of focus.

Two (2) other Frames appear to have a very small image but unable to print them.

Image size on Frame 10A-11 is 3mm.

Frame 10A-11

GR 1 Paper: Exp 60 sec @ f 2.8 x 20 Mag printed for maximum detail. This one appears to be the sharpest image. Definite pattern appears in this print.

Frame 9A-10

As for Frame 10A-11 except out of focus.

Frame 7A-8

As for Frame 10A-11 except out of focus.
A shorter focal length appears to have been used on this Frame.

Frame 6A-7

As for Frame 10A-11 except out of focus.
Does not appear to be same object as other Frames.

Frames 11A-12 and 12A-13

Appear to be the moon out of focus.

Two (2) other Frames appear to have a very small image but unable to print them.

Image size on Frame 10A-11 is 3mm.

Frame 10A-11

GR 1 Paper: Exp 60 sec @ f 2.8 x 20 Mag printed for maximum detail. This one appears to be the sharpest image. Definite pattern appears in this print.

Frame 9A-10

As for Frame 10A-11 except out of focus.

Frame 7A-8

As for Frame 10A-11 except out of focus.
A shorter focal length appears to have been used on this Frame.

Frame 6A-7

As for Frame 10A-11 except out of focus.
Does not appear to be same object as other Frames.

Frames 11A-12 and 12A-13

Appear to be the moon out of focus.

Two (2) other Frames appear to have a very small image but unable to print them.

Image size on Frame 10A-11 is 3mm.

Frame 10A-11

GR 1 Paper: Exp 60 sec @ f 2.8 x 20 Mag printed for maximum detail. This one appears to be the sharpest image. Definite pattern appears in this print.

Frame 9A-10

As for Frame 10A-11 except out of focus.

Frame 7A-8

As for Frame 10A-11 except out of focus.
A shorter focal length appears to have been used on this Frame.

Frame 6A-7

As for Frame 10A-11 except out of focus.
Does not appear to be same object as other Frames.

Frames 11A-12 and 12A-13

Appear to be the moon out of focus.

Two (2) other Frames appear to have a very small image but unable to print them.

Image size on Frame 10A-11 is 3mm.

RUSSELL HENTHORN SIGHTING BENDIGO 24 MAY 83

PHOTOGRAPHY DETAILS

CAMERA: Fujico STX-1 Cable shutter release used

LENS: KIMUNAR 500M

CONVERTER: HANIMEX 2X

FILM: Fujicolor 35mm colour print film

F No constant for all frames : F8

ORIGINAL FRAME NO	PRINT NO	APPROX TIME (START OF EXPOSURE) 24 MAY 83	LENGTH OF EXPOSURE
3	1	2058	15 sec
4	2	2058.30	10 sec
5	3	2100	8 mins
6	4	2109	10 mins
7	5	2119	20 sec
8	6	2120	10 min
9	7	2133	7 min

Frame 10, a 20 second exposure taken at 2140 hrs, did not produce an image.

During the photography sequence Mr Henthorn recentred the light for 10 the middle of the focussing screen of his camera at the beginning of each exposure. This involved moving his camera downwards and to the left. For all frames the camera was kept horizontal. Mr Henthorn has advised that the camera was moved inadvertantly short after the shutter was opened for the exposure of frame 9.

RUSSELL HENTHORN SIGHTING BENDIGO 24 MAY 83

PHOTOGRAPHY DETAILS

CAMERA: Fujico STX-1 Cable shutter release used

LENS: KIMUNAR 500M

CONVERTER: HANIMEX 2X

FILM: Fujicolor 35mm colour print film

F No constant for all frames : F8

ORIGINAL FRAME NO	PRINT NO	APPROX TIME (START OF EXPOSURE) 24 MAY 83	LENGTH OF EXPOSURE
3	1	2058	15 sec
4	2	2058.30	10 sec
5	3	2100	8 mins
6	4	2109	10 mins
7	5	2119	20 sec
8	6	2120	10 min
9	7	2133	7 min

Frame 10, a 20 second exposure taken at 2140 hrs, did not produce an image.

During the photography sequence Mr Henthorn recentred the light for the middle of the focussing screen of his camera at the beginning of each exposure. This involved moving his camera downwards and to the left. For all frames the camera was kept horizontal. Mr Henthorn has advised that the camera was moved inadvertantly short after the shutter was opened for the exposure of frame 9.

RUSSELL HENTHORN SIGHTING BENDIGO 24 MAY 83

PHOTOGRAPHY DETAILS

CAMERA: Fujico STX-1 Cable shutter release used

LENS: KIMUNAR 500M

CONVERTER: HANIMEX 2X

FILM: Fujicolor 35mm colour print film

F No constant for all frames : F8

ORIGINAL FRAME NO	PRINT NO	APPROX TIME (START OF EXPOSURE) 24 MAY 83	LENGTH OF EXPOSURE
3	1	2058	15 sec
4	2	2058.30	10 sec
5	3	2100	8 mins
6	4	2109	10 mins
7	5	2119	20 sec
8	6	2120	10 min
9	7	2133	7 min

Frame 10, a 20 second exposure taken at 2140 hrs, did not produce an image.

During the photography sequence Mr Henthorn recentred the light for the middle of the focussing screen of his camera at the beginning of each exposure. This involved moving his camera downwards and to the left. For all frames the camera was kept horizontal. Mr Henthorn has advised that the camera was moved inadvertantly short after the shutter was opened for the exposure of frame 9.

THE BENDIGO & NORTHERN DISTRICT
BASE HOSPITAL
(Incorporated)

P.O. Box 126, Bendigo
Victoria, Australia 3550
Phone: (054) 43 0411
Telex: 32527 - Bgobase

Enquiries Contact
NRP/jp

29th June, 1983.

STAFF OFFICER INTELLIGENCE
HEADQUARTERS SUPPORT COMMAND
RAAF
5 JUL 1983
VICTORIA BARRACKS
VIC. 3004

Mr. Ken Llewellyn,
Squadron Leader Reserve,
Victoria Barracks,
St. Kilda Road,
MELBOURNE, 3004.

Dear Sir,

I am enclosing herewith two reports relating to unusual aerial sightings by members of staff of this hospital. I have contacted all departmental heads in the hospital but to date these are the only two reports received. If I receive any further reports by staff members I will forward these to you.

Yours sincerely,

NORMAN R. PHILLIPS,
Manager & Secretary.

Encls.

REPORT OF UNUSUAL AERIAL SIGHTINGS

Part 1 - Report by Observer

STAFF OFFICER INTELLIGENCE
HEADQUARTERS SUPPORT COMMAND
RAAF
VICTORIA BARRACKS
MELBOURNE VIC. 3004
5 JUL 1983

1. Name of Observer LORRAINE GUTCHER. Age 44.

Address 30 LANSELL ST BENDIGO

State VIC Post Code 3550.

Occupation DIET COOK.

Telephone No. (home) # ..... (Business) 430411 EX 248.

2. a. Exact location of observer BACK COURTYARD OF BENDIGO BASE HOSPITAL

b. Observer's familiarity with the location WORK.

3. Start of observation: Date 21.5.83 Time 11.30 ~~am~~/pm

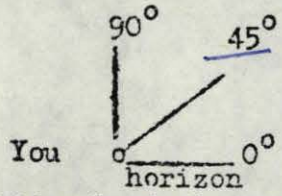
End of observation: Date 21.5.83 Time 11.35 ~~am~~/pm

4. Accuracy of date 21.5.83 Time 11.30 - 35.

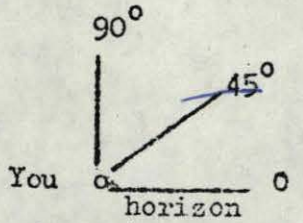
5. General weather conditions of time of observation, referring to cloud, wind, visibility etc. CLEAR FROSTY NIGHT

6. a. In what direction was the sighting first observed? N.E.

b. At what angle to the horizon?



7. a. In what direction was the sighting last observed? N E



8. Estimate of distance and/or altitude from observer NOT ~~KNOW~~ KNOWN

9. How were the answers to questions 6, 7 and 8 assessed, and were aids or equipment used during the sighting? NO AIDS VISUAL SIGHTING

/10. Describe

10. Describe the object(s)/light(s) as follows:

a. number 2

b. colour WHITE RED GREEN. LIKE AIRCRAFT LANDING LIGHTS

c. size ?

d. shape O

e. brightness (relative to full ~~moon~~/star) BRIGHT LARGE STAR.

f. movement/direction of travel STATIONERY

g. sound NIL

h. speed NIL

i. method of propulsion ? ?

j. manner of disappearance WAS VISABLE

11. a. Narrative description of the sighting and any unusual features or additional comments

LOOKED LIKE AIRCRAFT IN DISTANCE WITH LANDING LIGHTS OPPERATING ONLY OBSERVED SHORT TIME.

/b. Diagram

b. Diagram or sketch of sighting (if possible)

NORTH EAST.

ME.
X

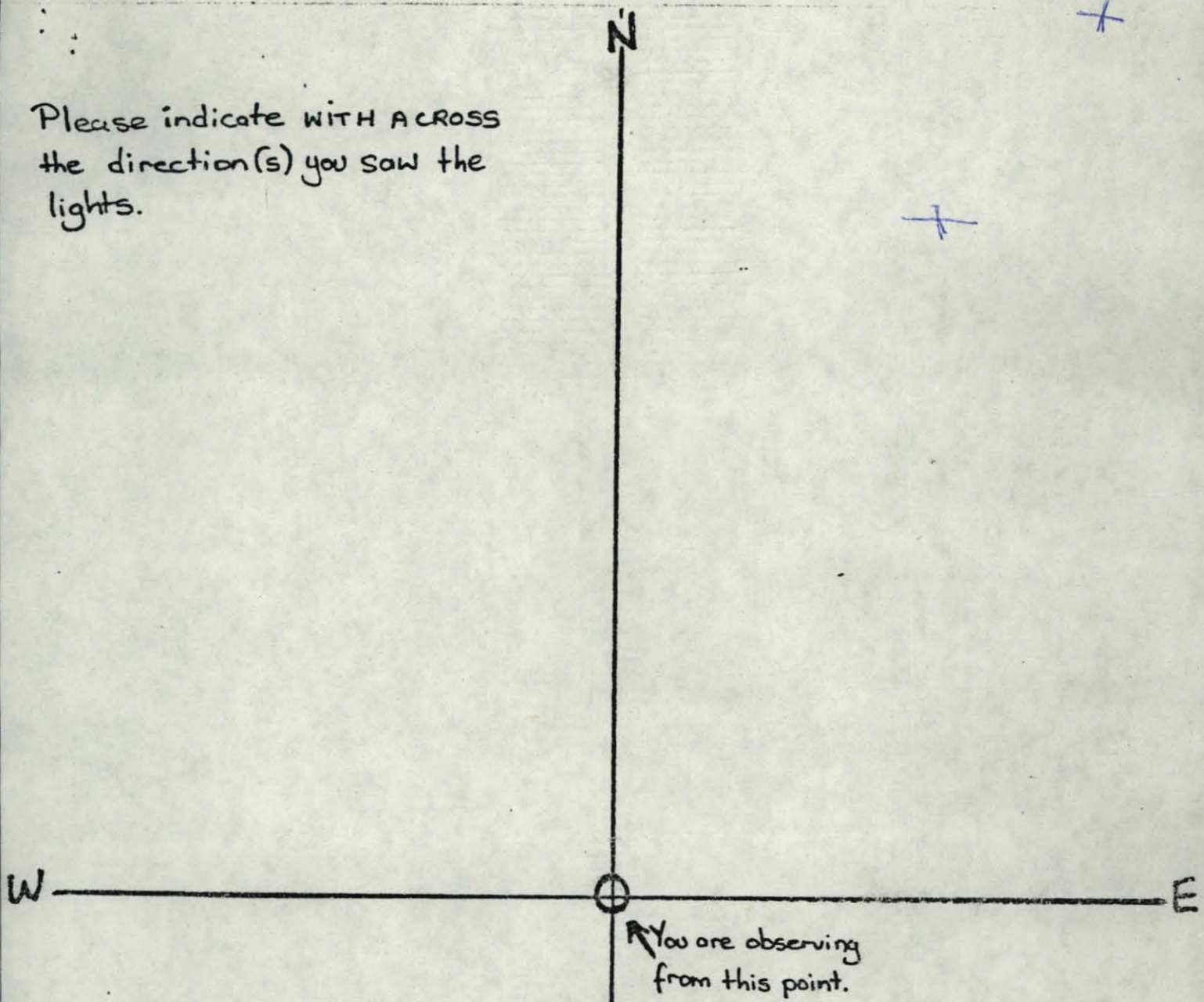
12. Have you any photographs of the sighting, or is there any physical evidence of fragments, scorching or ground indentations? NO

13. How many other witnesses were there to the sighting? (Please provide names and addresses if possible) NONE

14. Have you previously made any reports to official authorities or UFO organizations regarding unusual aerial sightings? If so, give brief details of dates and circumstances. NO.

Date 21.6.83. Signature Lorraine Gutcher.

Please indicate WITH A CROSS the direction(s) you saw the lights.



REPORT OF UNUSUAL AERIAL SIGHTINGS

Part 1 - Report by Observer

STAFF OFFICER INTELLIGENCE
HEADQUARTERS SUPPORT COMMAND
RAAF
VICTORIA BARRACKS 5 JUL 1983
MELBOURNE VIC.

1. Name of Observer Michael Bazeley Age 18

Address 7 Belinda Ave, Golden Square, Bendigo

State Victoria Post Code 3555

Occupation Apprentice Fitter + Turner

Telephone No. (home) 47 8292 (Business) _____

2. a. Exact location of observer Home Address.

b. Observer's familiarity with the location Good.

3. Start of observation: Date 21-5-82 Time 8:00 am/pm

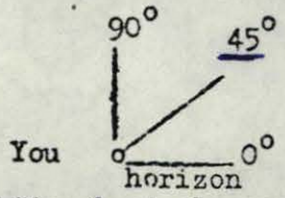
End of observation: Date 21-5-82 Time 8:10 am/pm

4. Accuracy of date 80% Time 100%.

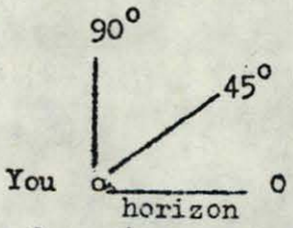
5. General weather conditions of time of observation, referring to cloud, wind, visibility etc. Clear Night, No Wind, Good Visibility.

6. a. In what direction was the sighting first observed? West

b. At what angle to the horizon?



7. a. In what direction was the sighting last observed? 45°



8. Estimate of distance and/or altitude from observer About 5km

9. How were the answers to questions 6, 7 and 8 assessed, and were aids or equipment used during the sighting? No

/10. Describe

10. Describe the object(s)/light(s) as follows:

a. number Two

b. colour Red Green

c. size

d. shape Round

e. brightness (relative to full moon/star) Brighter than a Star.

f. movement/direction of travel It was moving sideways back a fourth.

g. sound None

h. speed Slow

i. method of propulsion Unknown

j. manner of disappearance Unknown.

11. a. Narrative description of the sighting and any unusual features or additional comments I saw the U.F.O at about 8 pm at night it was brighter than the stars but not as bright as the moon. It was moving sideways back and fourth at a slow rate. I watched it for about ten minutes then went inside. I came back a couple of hours later to see if it was still there but it was gone.

/b. Diagram

b. Diagram or sketch of sighting (if possible)

12. Have you any photographs of the sighting, or is there any physical evidence of fragments, scorching or ground indentations? No

13. How many other witnesses were there to the sighting? (Please provide names and addresses if possible)

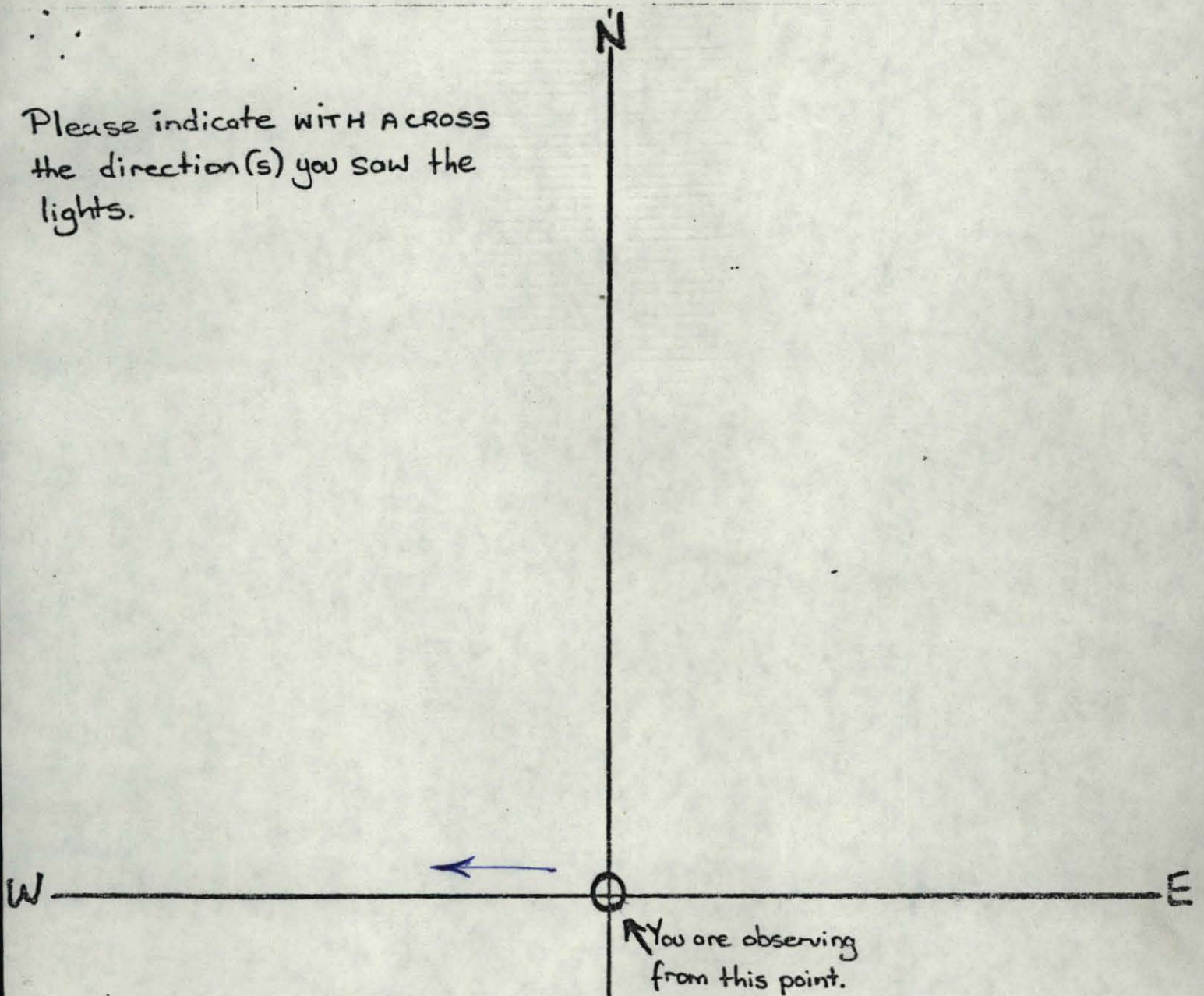
Simon Bazeley 7 Belinda Ave Golden Square Bendigo

Gabrielle Bazeley " " " "

14. Have you previously made any reports to official authorities or UFO organizations regarding unusual aerial sightings? If so, give brief details of dates and circumstances. No

Date 21-6-83 Signature Michael Bazeley

Please indicate WITH A CROSS the direction(s) you saw the lights.



21 MAY

	Date	Time	Event
1.	21 MAY 83	0830	Mr. O. DAVIES - Heald Newspaper - rang about UAS
2.		0835	Mr. R. McSWAN - Melbourne Herald - rang about UAS
3		0840	I rang o/o Pt. Cook and Laverton to enquire about Aircraft activity in the Bendigo Area between 11.00 and 0030 last night. findings : Nil Military aircraft activity
4		0845	Miss T. GRIMSHAW - 9 News - rang about UAS
5		0915	I rang Mr. BARNETT - Senior Operations Controller - Tullamarine ring to enquire about civil air activity in Bendigo area at times stated above. To his knowledge there was none
6		0930	Veronica Mathieson - ABC News - rang about UAS
7		1000	I rang the Met. office attempting to get details of weather : Ballons in Bendigo area at times above. No answer from call
8		1030	I received an anonymous call and the caller said that this UAS was actually caused by a Rock Band trying out laser lights at Bendigo : Due to the low cloud cover the lights apparently reflected on the clouds giving rise to the patterns described as an UAS to the outgoing DSD :
		~~1035~~	~~Mr. W. Thompson 3UZ News~~
			UP TO NOW THE ANSWER GIVEN TO PRESS IS : THE RAAF IS INVESTIGATING THE MATTER AND IN DUE COURSE THE PRO MAY DEAL WITH THE MEDIA IF NECESSARY
9		1035	Mr. W. THOMPSON - 3UZ News - rang and wanted confirmation that UAS was actually laser lights : No confirmation given
10		1040	I tried to contact PRO on 643920 to seek advice on Media questions and to discuss the anonymous call ~ laser lights theory - NO answer.

DATE	TIME	EVENT
11 MAY 83	1045	SQNLDR BAILLIE - DSO DEFAIR rang with Reference to SIG HQSC ADMIN 69T/SADMIN50 of 20 May 83 regarding attachment of an ARDU pilot to Pearce for 24-26 MAY 83. Request is OK and written confirmation will be sent on Monday (23 May 83)
12	1050	Received an anonymous call from a photographer who said that he photographed an UAS ~~near~~ T/10 miles North of Bendigo at about 0030 HRS this morning. Since he did not want to reveal his identity and was not prepared to give ~~to much~~ more details of his sighting I did not pursue the matter.
13	1050	I rang WGCDR Foote to get advice of an investigations of UAS - He was out.
14	1050	I rang WGCDR Hewson to get advice on investigation of UAS. He advised me to inform HQOC and DEFAIR and to get Laverton - nearest RAAF Base to location of UAS sighting - to investigate further if need be. Above was passed to SQNLDR Baillie DSO DEFAIR FLTLT Jim Smith HQOC and O/O Laverton.
15	1115	Call from Channel T on UAS.
16	1230	Rang PRO - again no answer.
17	1310	SGT Radovanovic from Werribee rang to complain about a hot water system (Gas) U/S. Gave him 652-5111
18	1330	FLTLT J. Smith - HQOC - rang to tell me that there were no HQOC aircraft in the Bendigo at times stated previously

	DATE	TIME	EVENT
19	21 MAY 83	1430	Rang PRO again - Still no answer.
20		1525	Mrs. Fisher, from Monbulk, called to report an UAS over Monbulk - see attached "UFO" Report.
21		1545	Notified by Bendigo Police that NO UAS were reported to the officer on duty last night.
22		1630	SGT Radovanovic rang again - he could not get the gas maintenance workers to fix his hot water system. I consequently contacted Mr. K.J. Mathews from the "Gas & Fuel" and was told that nothing could be done until monday morning - message passed to SGT Radovanovic.
23		1800	WGCDR Foote to check on my earlier call - told him that "EVERYTHING WAS UNDER CONTROL"!?
24		2115	LAC Nagle from Laverton rang to complain about a U/S Hot Water System (Electrical). Refered him to 299 2144 and he later rang to say that something was being done.
25	22 MAY 83	0010	Mr Kevin SUTTON rang to report UAS sighting near Stanhope - see attached report.

UNIDENTIFIED FLYING OBJECT (UFO) REPORTS

Reference: A. HQSC Air Staff Instruction 3/3

When a report of an unidentified flying object (UFO) is received, the Duty Staff Officer is to:

a. Record details of observation and observer on an Initial Unusual Aerial Sighting Report (Annex A).

b. Ascertain whether the observer wished to proceed further by completing a standard questionnaire.

c. If so, advise that a reply paid questionnaire will be forwarded without delay.

d. Pass the Initial Unusual Aerial Sighting Report to CINTO on the next working day.

e. If contacted by the Press refer them to PRO.

INITIAL UNUSUAL AERIAL SIGHTING REPORT

1. Name of Observer: Mrs J. Fisher

2. Address of Observer: 8 Mount Pleasant Rd, MONBULK - Ph 756-6760

3. Date and time of start of observation: 21 May 83 - 0600 for about 15 minutes - 0545-0600

4. Duration of observation: 15 minutes

5. Observer's location at time of sighting: Inside house - looking due S-E

6. Brief description of object(s): looked like a big star - with Blue - Green - White - Red flashing light

7. Object's bearing when first observed: Moving due East after Hovering for a while - moving very slowly

8. Direction of travel: Moving due East

9. Speed: Very Slowly

10. Angle of elevation: very high - Aircraft cruising height

11. Object's bearing when last observed: due East until it dissappeared in clouds

12. Caller ~~wishes~~/does not wish to receive standard questionnaire: and does not wish to pursue the matter any further

No.1 Rang as a result of hearing of sighting of flashing lights at Bendigo; Article in Today's sun prompted her to ring me, since she does not believe that lights could have been from laser lights of Bendigo Rock/Jazz Group.

(G.A. LEFEVRE)
FLGOFF
DSO - 21 May 83.

UNIDENTIFIED FLYING OBJECT (UFO) REPORTS

Reference: A. HQSC Air Staff Instruction 3/3

When a report of an unidentified flying object (UFO) is received, the Duty Staff Officer is to:

a. Record details of observation and observer on an Initial Unusual Aerial Sighting Report (Annex A).

b. Ascertain whether the observer wished to proceed further by completing a standard questionnaire.

c. If so, advise that a reply paid questionnaire will be forwarded without delay.

d. Pass the Initial Unusual Aerial Sighting Report to CINTO on the next working day.

e. If contacted by the Press refer them to PRO.

INITIAL UNUSUAL AERIAL SIGHTING REPORT

1. Name of Observer: Mr. Kevin Sutton

2. Address of Observer: Box 18 Stanhope
Tongala Rd., Ph STANHOPE - 058 - 572 661

3. Date and time of start of observation: 1150 of 21 May 83.

4. Duration of observation: a 10 mins about 10 miles

5. Observer's location at time of sighting: 2½ miles west of Girgarre.

6. Brief description of object(s): A group of orange lights, about the size of car lights, ≈ 600' wide and 50' high.

7. Object's bearing when first observed: ½ mile east of Tongala Rd and travelling parallel to the road - straight south

8. Direction of travel: Travelling south

9. Speed: ≈ 100 mph

10. Angle of elevation: from 30' to 70' off the ground

11. Object's bearing when last observed: Due south sight of UAS was gradually lost as it moved away from sighter

12. Caller ~~wishes~~/does not wish to receive standard questionnaire: ..... leaves it up to DSO to pursue further

N.o.A

Member believes that phenomenon was a group of UFO flying in formation flight. He believes group is moving towards Melbourne.

(G. A. LEFEVRE)
FLGOFF
DSO - 21 MAY 82

20 MAY

	Date	Time	Event
1.		1620	LAC FROM JSD RANG TO FIND A BARRACK PHONE Nº TO GAIN ACCESS TO HIS NEW MQ.
2.		1710	DARYL SOMER'S SHOW RANG TO GET BUS HRS Nº OF PRO
3		1730	FSGT J CAMBRIDGE RANG TO OBTAIN INFO ON TRAVEL ALLOWANCES ON MOTHER-IN-LAWS DEATH.
4		0030	UFO SIGHTING REPORTED AT BENDIGO (3BO)
5		0120	AAP RANG REGARDING UFO SIGHTING GAVE PRO'S NO NO COMMENT MADE.
6		0215	3BO RANG AGAIN REPORTING MORE UFO ACTIVITY.

UNIDENTIFIED FLYING OBJECT (UFO) REPORTS

Reference: A. HQSC Air Staff Instruction 3/3

When a report of an unidentified flying object (UFO) is received, the Duty Staff Officer is to:

a. Record details of observation and observer on an Initial Unusual Aerial Sighting Report (Annex A).

b. Ascertain whether the observer wished to proceed further by completing a standard questionnaire.

c. If so, advise that a reply paid questionnaire will be forwarded without delay.

d. Pass the Initial Unusual Aerial Sighting Report to CINTO on the next working day.

e. If contacted by the Press refer them to PRO.

INITIAL UNUSUAL AERIAL SIGHTING REPORT

1. Name of Observer: MR. MICHEAL EVANS

2. Address of Observer: 3BO STUDIOS, 401-405 HIGH ST. BENDIGO [19 REPORTS TO RADIO STATION]

3. Date and time of start of observation: 20 MAY 83 2300 HRS

4. Duration of observation: ONE OBJECT STILL PRESENT AT 0030 HRS

5. Observer's location at time of sighting: 3BO STUDIO'S [AND OTHER LOCATIONS AROUND BENDIGO]

6. Brief description of object(s): 1ST OBJECT PINK AND GREEN LIGHT. 2ND OBJECT (STILL PRESENT) CHANGES COLOUR FROM RED TO GREEN TO YELLOW TO WHITE. WHEN VIEWED THROUGH A TELESCOPE APPEARS TO BE "HONEYCOMBED"

7. Object's bearing when first observed: SOUTH EAST OF RADIO STATION [APPROX DUE N^TH OF MELBOURNE]

8. Direction of travel: HOVERING

9. Speed: HOVERING

10. Angle of elevation: CROSS MARKED ON STUDIO WINDOW AT ≈ 45°

11. Object's bearing when last observed: ..HOVERING...S/E..OF..RADIO..STATION.

.....

12. Caller wishes/~~does not wish~~ to receive standard questionnaire: .....

...YES.....

1. MR. M. EVANS RANG BACK AGAIN AT 0215 TO REPORT THAT THE HOVERING UFO THAT WAS BEING VIEWED FROM THE STUDIOS HAD DEPARTED AT HIGH SPEED IN AN EASTERLY DIRECTION. HE ONCE AGAIN CONFIRMED THE DESCRIPTION OF THE OBJECT AS VIEWED THROUGH A TELESCOPE BY ONE OF THE LISTENING AUDIENCE AS 'WHITE HONEYCOMBED WITH RED AND GREEN ROTATING LIGHTS AROUND THE BASE'. MR EVANS INDICATED THAT HE HAD MARKED THE POSITION OF THE UFO ON A WINDOW AS VIEWED FROM HIS NORMAL SEATING POSITION.

2. UPON DEPARTURE OF THIS OBJECT MR EVANS MOVED TO THE ROOF OF THE 3BO BUILDINGS AND SPOTTED ANOTHER OBJECT AT AN ELEVATION OF APPROX. 80° WHICH DEPARTED AT HIGH SPEED (MOVED THROUGH APPROX 1ft at arms length in 1 to 2 seconds 'faster than I've ever seen anything move.'

3. 9 MORE UFO's were observed in a small area between Bendigo and KYNETON. THESE WERE VIEWED THROUGH HIGH POWERED FIELD GLASSES AND WERE DESCRIBED SIMILAR TO THE 'HONEYCOMB' OBJECTS.

4. 2 MORE OBJECTS WERE OBSERVED OVER WHITE HILLS [NORTH EAST OF BENDIGO, VIRTUALLY AN OUTER SUBURB.] 1 OF WHICH WAS DIRECTLY ABOVE THE OBSERVER AT SANDHURST BOYS HOME.

5. AT 0215 MR EVANS THAT A LARGE NUMBER OF CALLS WERE STILL BEING RECEIVED AND THAT HE AND HIS STAFF WERE ENDEVOURING TO OBTAIN NAMES AND ADDRESSES. HOWEVER SOME PEOPLE WERE A LITTLE RETICENT. MR EVANS ADVISED THAT ANY CALLS COMING IN ON THE 'TALK BACK LINE' WERE BEING TAPED AND COULD BE MADE AVAILABLE TO AN INVESTIGATION.

6 3BO's PHONE NUMBER is (054) 439300.

27 ALBERT ROAD,
CARNEGIE, 3163
Phone: 578 2627

13 34 10
4 20 43
$17^h\ 54^m\ 53^s$ (LST at $2^h\ 20^m$ AEST)

$\alpha = 13^h\ 23^m$
$\delta = -14^\circ\ 17'$

$H = 4^h\ 32^m = 68^\circ$

$a = 24^\circ$

$A = 274^\circ$

Robert L. Alabaster & Co.
REGISTERED TAX AGENT AND ACCOUNTANTS

UNUSUAL AERIAL SIGHTINGS BENDIGO VIC 20-22 MAY - INTERIM REPORT

INVESTIGATING OFFICER

BACKGROUND

1. On nights of 20-21 and 21-22 May many people, estimated to number in hundreds, saw unusual lights in the skies over Bendigo and environs. Sightings also were made in the Shepparton area, at Eildon, Ballarat and as far south west as Warrnambool.

2. Initial reports, direct to the RAAF, and to other agencies, such as radio stations and newspapers, were highly consistent. Invariably the sightings were of bright white lights with smaller red and green lights (others reported blue as well) adjacent. The lights appeared to be spinning or rotating rapidly. In the Bendigo area a number of people reported observing upto nine lights simultaneously in various parts of the sky. The lights were mostly stationery and visible in most cases for long periods of time - upto three or four hours.

3. Possibly the prime witness, and certainly the person reponsible for the wide publicity given to the sightings is Mr Mike Evans, a 17 year old disc jockey with 3BO, the local radio station in Bendigo. On Friday 20 May, Mr Evans was on duty between 1800-2359 hours. Following numerous calls from listeners he observed the lights himself, through his shift and until 0600 21 May. During the following evening, (21-22 May) Mr Evans photographed several of the lights.

RAAF Response

4. On Mon 23 May, CINTO became rapidly aware that the sightings would have to be investigated with an unusual degree of care and thoroughness. DAFIS (SQNLDR Frame) contacted CINTO by phone and made this point and the PRO (Mr Ken Llewellyn) who left for duty interstate pm hours on 23 May obtained AOC approval for CINTO to handle media enquiries concerning the sightings as well as the actual investigation.

5. In view of the media interest in the sightings, arrangements were made for CINTO to visit Bendigo on Tuesday 24 May - mainly to interview Mr Evans but also to collect other information relevant to the investigation. Travel restrictions confined the visit to one day.

Visit to Bendigo

6. In Bendigo, CINTO interviewed three witnesses to the sightings, Mr Evans, his mother Mrs Evans and Mr George Fish, a prison officer at Bendigo Gaol. CINTO also obtained photocopies of the three-hourly met obs made at the Bendigo Gaol on behalf of the Bureau of Meteorology. The remainder of CINTO's time in Bendigo was taken up with press interviews.

Film of Sighting

7. Mr Evans handed the original negatives of his sightings to CINTO. Subsequently this film has been reproduced by CPE and the original plus duplicate negatives and prints have been returned to mr Evans by registered post. Prints are being forwarded to DAFIS.

Results of Visit

8. The visit produced evidence:

a. of radio ducting. Mr Fish between 0300 - 0345 on 22 May at Bendigo Prison on a Philips CU902 UHF radio was able to hear two prison officers conversing on small UHF radios (Philips SXR-W1) at Dhurrangile Prison near Shepparton.

b. that the lights were a long way from earth. Mrs Evans reported that she and her husband, on saturday evening (about 1930 hours) observed a light they had seen on Friday in the south east sky. On Saturday Mrs Evans made her

observation from Harcourt (15 miles south of Bendigo) whilst her husband was observing the same light from Bendigo. Despite the distance separating them on the ground, both observers had to look south east at between 30-45° to observe the light.

9. Publicity given to CINTO's visit caused about 100 people to contact HQSC (mainly CINTO and PRO) on Wed and Thu with reports of sightings. Many calls were from the Bendigo area and related to the lights of the previous weekend. In almost all cases the callers requested a copy of the standard questionnaire. These have been dispatched and returns are expected shortly (from 30 May).

Meteorological Conditions

10. Although some data for the Bendigo area has been collected, more has to be obtained. Facts are: There is some evidence, not comprehensive at this stage, of radio ducting and inversions. Planetary and stellar movements and satellite orbits have not been checked to date due mainly to the attention CINTO was required to pay to the media throughout the week 23-27 May. CINTO proposes to check these things once completed questionnaires have been returned and the information about time, direction, and elevation of sightings is correlated.

Laser Lights

11. One anonymous caller to the RAAF, claimed that the Bendigo lights were caused by a rock group experimenting with laser lighting. Mr Peter Bullen, the Principal of the Education Section at the Science Museum has advised that, from his own experience and experiments, lasers can cause spectacular lighting effects and that, in his view they could have been the source of the lights seen at Bendigo. Although an anonymous

caller repeated the claim on Fri 27 to Channel 7 and to a Melbourne radio station that lasers were responsible, this caller has not provided sufficient information for CINTO to investigate the claim.

National Security

12. CINTO has been unable to discover any evidence to date which suggests that the lights observed at Bendigo represent in any way a threat to national security. No unusual markings on the ground have been reported and no reports associating injury or damage to people, stock or property with the appearance of the lights have been received.

Comparison with Melbourne Sightings

13. On the night of 24-25 May, many people in the Melbourne area reported to the RAAF and to other agencies unusual lights mainly in the western and south western skies. Invariably reports mentioned one main light which was white, pulsating with smaller associated green and red lights. Channel 7 made a video-tape of this sighting. Checks with the Bureau of Meteorology, with the Science Museum, and with SMACO at Tullamarine led CINTO to conclude that in all probability the main sightings was of the star Canopus being viewed through an inversion layer.

14. Further imagery of an unusual light in the sky above Bendigo was obtained by a technical school student Mr on . This imagery (judging only from the newspaper photograph seen by CINTO) seems to be of better quality than that obtained by Mr Evans. Mr used 35mm colour slide film whereas Mr Evans used 35mm TRI-X. Mr has indicated by phone that he is prepared to make his film available to the RAAF. CINTO recommends that he be sent to Bendigo in the near future to collect this film and to talk at greater length and away from the glare of

publicity with both Mr and Mr Evans as well as other witnesses, whose questionnaire responses provide leads worthy of further investigation.

Air Movements/Radar

15. SMACO has advised that air activity in Bendigo during time of sightings was limited and that it varied whereas the lights appeared to remain relatively stationary for long periods. No spurious or unaccounted for radar 'paints' from the Bendigo area were recorded during the times of interest.

Conclusions

16. At this stage these are tentative but reflect estimates based on information available:

a. The lights appear to represent no threat to national security.

b. The lights do not seem to have been projected by a flying object because no unusual radar returns were detected by Melbourne radar.

c. The light source(s) are either land based (eg, train headlights, possibly lasers) or from space (planets and stars). The lights have been unusual because of the unusual atmospherics that probably existed in the Bendigo area on the nights the sightings were made.

McQUEEN

MR RICHARD EVANS 435824
father of MIKE EVANS.

B BASE HOSPITAL 430411

MR LOUGOON
70 GOYNES RD & 484746
EPSOM

MR GORDON REED
75 VIOLET ST
GOLDEN SQUARE

PAUL DAVIS was followed - upset + pale.

Rock band
laser lights

POLICE

UFO REPORT : 25 MAY 83 : 2334 HRS

1. MAX STEVENS

2. CHANNEL SEVEN NEWS 699 4050

3. CURRENTLY BEING OBSERVED

4. —ii—

5. CHANNEL SEVEN BLG ROOF

* NOTE (NOTE : A VIDEOTAPE HAS BEEN MADE OF THE OBJECT)

6. STAR LIKE FLASHING DIFFERENT COLOURS STATIONARY

7. SOUTH WEST

8. STATIONERY

9. ~~NIL~~ —i.—

10. LOW TO MEDIUM ELEV

11 CURRENTLY BEING OBSERVED.

12 NO — BUT WORTHWHILE FOLLOWING ~~THROUGH~~ UP DUE TO VIDEOTAPE

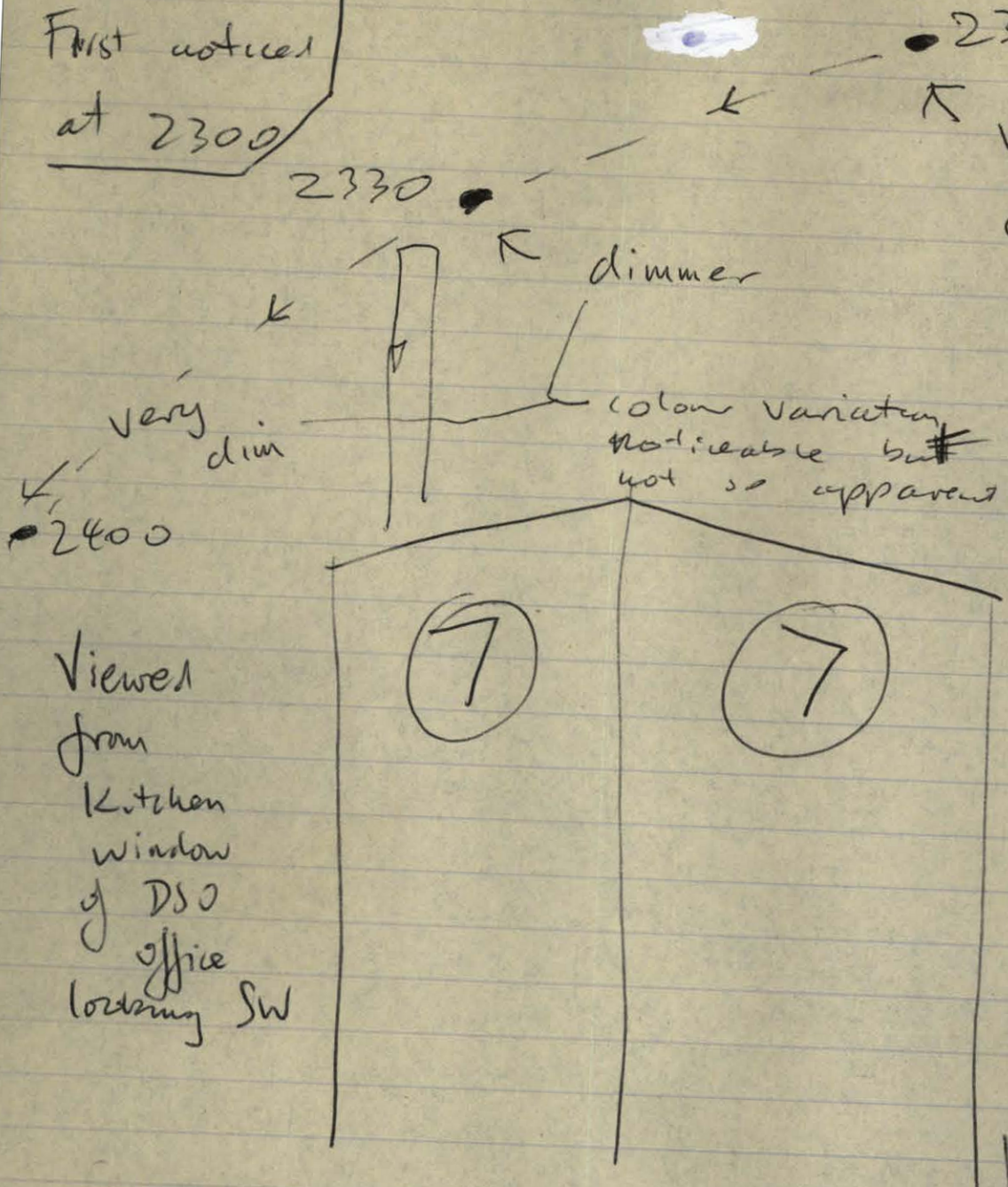
DUTY STAFF OFFICER
HEADQUARTERS
SUPPORT COMMAND

~~1st~~

First noticed at 2300

SIGHTING BY DSO 25 MAY 82

FLTLT J.F. LUTTON EXT 3181



Viewed from kitchen window of DSO office looking SW

DESCRIPTION

- Shimmering
- erratic
- like star
- Mostly white (like star) however occasional flashes of pale blue/green/yellow. Very occasionally red/orange

John Lutton FLTLT

DUTY STAFF OFFICER
1 GROUP
SUPPORT COMMAND

22 MAY

	Date	Time	Event
1.	~~04~~ 22MAY	0955	LUSA O'NIEL - 3AW Both hang enquiring further info.
2.		1000	RONICA MATHERSON - ABC on UFO reports and on AF handling procedures. Referred both to PRO. Explained that RAAF were investigating as a matter of course - contacted PRO NOT AVAIL
3		1020	3AW CALLED AGAIN - PRO NOT ANSWERING T'PHONE - (CHECK AGAIN ") 3AW Asked for details of further sightings reported pm hrs 21 MAY 83 Gave details but NOT names of callers. Suggested possible explanations including temp inversion etc. Provided further details of RAAF investigatory procedures - ie standard investigations will take place.
4		1030 →	Continued to receive media queries throughout day re UFO's as PRO was not available suggested they contact CODSO WG CDR FOOTE - (with his concurrence) for further info. Standard answer " RAAF continues to investigate reports of unusual areal sightings as a service to the public - these investigations ~~will continue~~ take place as a matter of course"
5		1530	Contacted PRO who will handle calls from now on (having been away until this time).
6	*	1800	6 RAAF RANG WOFF DONHAM Teleng 285 - Admitted Hospital - 3 DAYS - plse advice section
7		1930	UFO REPORT ALTONA MRS MARTIN } see sep
8		2000	BENDIGO POLICE RANG - MORE UFO SIGHTINGS } Reports.
9		2200 →	MORE MEDIA CALLS UFO's BENDIGO? REFERRED TO PRO

Name: MRS MARTIN MOLLY
64 POWLETT ST
ELTHAM MEADOWS

Date/Time: 1830 HRS

Duration: Few Seconds

Description: Lights Red, Green, White/Yellow at 1 second intervals climbing horizontally into sky from 45° to 90° going South Very Fast.

Questionnaire: Yes - if it will help !!

ALSO

Bendigo Police - Cst. TONKIN

2x Sightings 1850 White lights
Going S.W.

Bendigo Police have been inundated with UFO calls over last week

REPORT OF UNUSUAL AERIAL SIGHTINGS

Part 1 - Report by Observer

1. Name of Observer Daryl MARTIN Age ____

Address _____

_____ State _____ Post Code _____

Occupation _____

Telephone No. (home) _____ (Business) _____

2. a. Exact location of observer On Evans' playroom roof

b. Observer's familiarity with the location good

3. Start of observation: Date 5/6/83 Time 6-30 am/pm

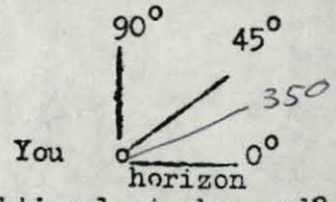
End of observation: Date _____ Time _____ am/pm

4. Accuracy of date _____ Time _____

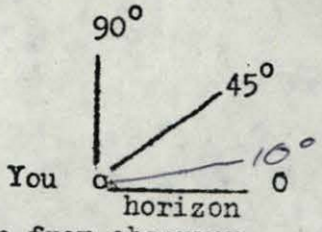
5. General weather conditions of time of observation, referring to cloud, wind, visibility etc. Cloudy

6. a. In what direction was the sighting first observed? Azimuth = 180°

b. At what angle to the horizon?



7. a. In what direction was the sighting last observed? Azimuth = 295°



8. Estimate of distance and/or altitude from observer _____

9. How were the answers to questions 6, 7 and 8 assessed, and were aids or equipment used during the sighting? _____

10 x 50 mm binoculars

/10. Describe

10. Describe the object(s)/light(s) as follows:

a. number _____

b. colour 4 yellow, 2 red, 2 bright white, and more white.

c. size _____

d. shape _____

e. brightness (relative to full moon/star) bright lights: mag. 0

f. movement/direction of travel WSW

_____

g. sound none

h. speed 1½° per second

i. method of propulsion —

j. manner of disappearance kept moving in a straight line

11. a. Narrative description of the sighting and any unusual features or additional comments

apparent closest approach Azimuth: 230°
Altitude: 45°

~~Brightness~~

/b. Diagram

b. Diagram or sketch of sighting (if possible)

12. Have you any photographs of the sighting, or is there any physical evidence of fragments, scorching or ground indentations? _____

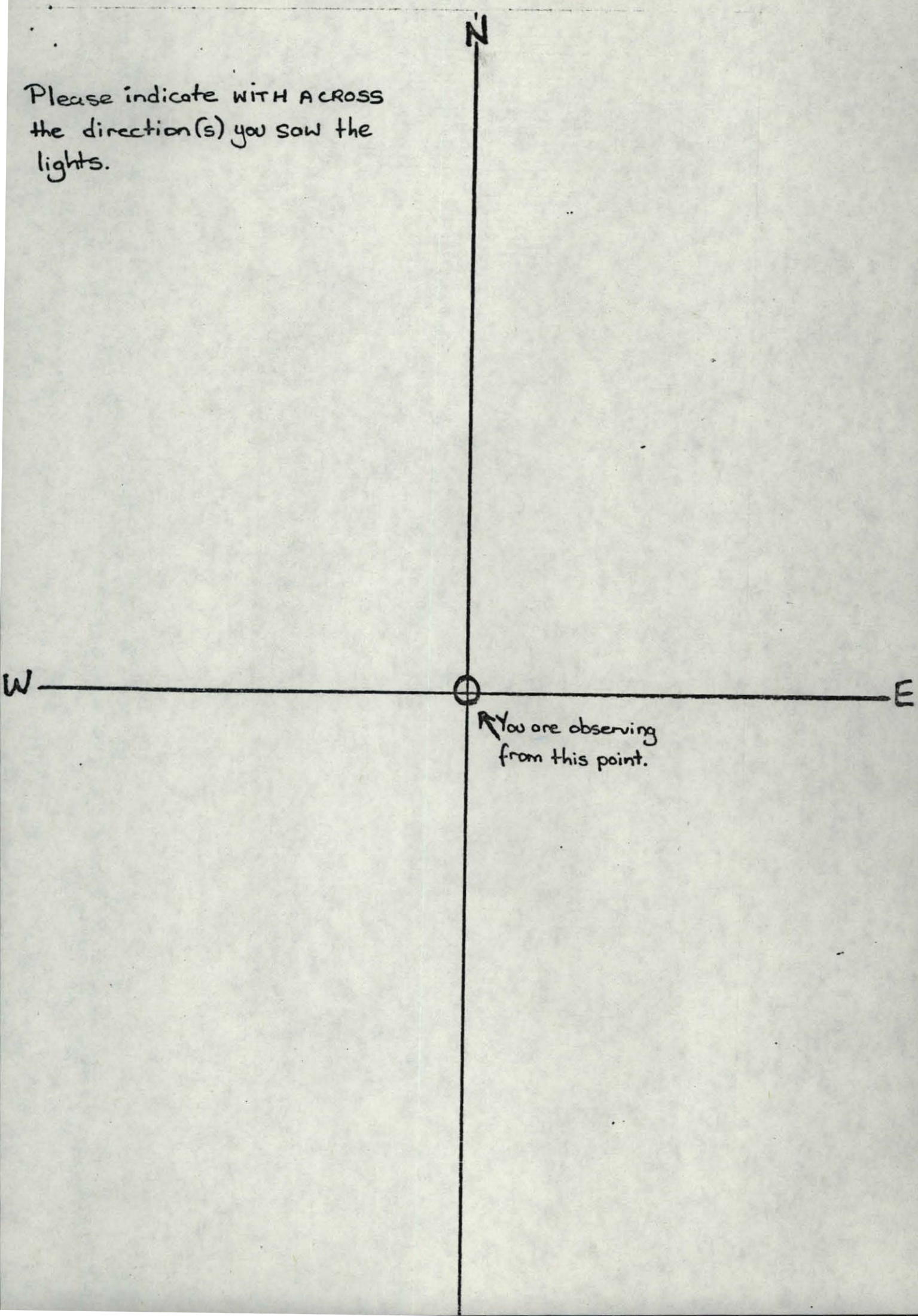
13. How many other witnesses were there to the sighting? (Please provide names and addresses if possible)

Richard and Robbie Evans

14. Have you previously made any reports to official authorities or UFO organizations regarding unusual aerial sightings? If so, give brief details of dates and circumstances. _____

Date 9/6/83 Signature D. S. Martin

Please indicate WITH A CROSS the direction(s) you saw the lights.



REPORT OF UNUSUAL AERIAL SIGHTINGS

Part 1 - Report by Observer

1. Name of Observer GEORGE FISH Age ____

Address 4 PLUMRIDGE ST BENDIGO

State VIC Post Code ____

Occupation POLICE WARDEN.

Telephone No. (home) ____ (Business) 421188.

2. a. Exact location of observer BENDIGO GAOL

b. Observer's familiarity with the location VERY

3. Start of observation: Date 22 MAY Time 0300 am/~~pm~~

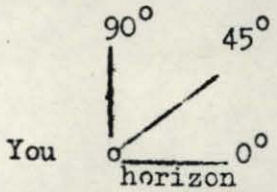
End of observation: Date " Time 0345 am/~~pm~~

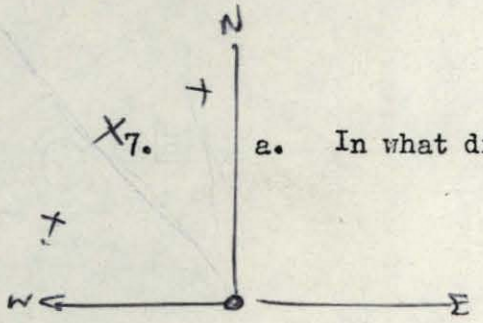
4. Accuracy of date OK Time ____

5. General weather conditions of time of observation, referring to cloud, wind, visibility etc. OK

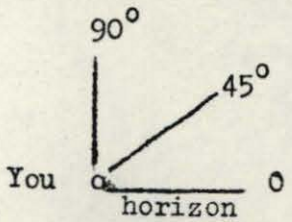
6. a. In what direction was the sighting first observed? NNW

b. At what angle to the horizon? 45° +





7. a. In what direction was the sighting last observed? ____



8. Estimate of distance and/or altitude from observer at long dist

9. How were the answers to questions 6, 7 and 8 assessed, and were aids or equipment used during the sighting? ____

DURING

DHURRINGILE PRISON

10. Describe ANAPROP RADIO CONDITIONS.

5TH OF SHEPPARTON

could hear two walkie-talkies talking to each other.

10. Describe the object(s)/light(s) as follows:

a. number 3.

b. colour

c. size

d. shape

e. brightness (relative to full moon/star) bright star.

f. movement/direction of travel

g. sound

h. speed

i. method of propulsion

j. manner of disappearance

11. a. Narrative description of the sighting and any unusual features or additional comments

light flashing / static red, green object white

/b. Diagram

b. Diagram or sketch of sighting (if possible)

12. Have you any photographs of the sighting, or is there any physical evidence of fragments, scorching or ground indentations? N.

13. How many other witnesses were there to the sighting? (Please provide names and addresses if possible)
Mrs Fish + son,

14. Have you previously made any reports to official authorities or UFO organizations regarding unusual aerial sightings? If so, give brief details of dates and circumstances. No.

Date _____ Signature _____

REPORT OF UNUSUAL AERIAL SIGHTINGS

Part 1 - Report by Observer

1. Name of Observer RUSSELL HENTHORN Age 16

Address _____

_____ State _____ Post Code _____

Occupation STUDENT

Telephone No. (home) (054) 42161 (Business) _____

2. a. Exact location of observer _____

_____

b. Observer's familiarity with the location VERY

3. Start of observation: Date 24 MAY Time 2050 am/pm

End of observation: Date 11 Time 2140 am/pm

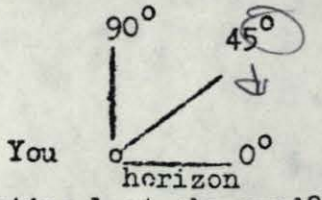
4. Accuracy of date OK Time OK

5. General weather conditions of time of observation, referring to cloud, wind, visibility etc. Cloud in east

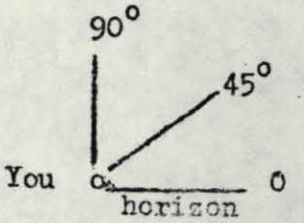
Fine + clear slight wind.

6. a. In what direction was the sighting first observed? W just N of W

b. At what angle to the horizon?



7. a. In what direction was the sighting last observed? down & left



8. Estimate of distance and/or altitude from observer way higher than plane, lower than stars.

9. How were the answers to questions 6, 7 and 8 assessed, and were aids or equipment used during the sighting? _____

binocs. / camera

/10. Describe

10. Describe the object(s)/light(s) as follows:

a. number 1

b. colour white flashing red + green underneath white

c. size possibly smaller than Venus ?

d. shape

e. brightness (relative to full moon/star)

f. movement/direction of travel constant from N → SW towards horizon

g. sound no sound

h. speed ~~constant~~ unk

i. method of propulsion unk

j. manner of disappearance behind roof of house nearby

11. a. Narrative description of the sighting and any unusual features or additional comments

nothing like the artist's impression

/b. Diagram

b. Diagram or sketch of sighting (if possible)

12. Have you any photographs of the sighting, or is there any physical evidence of fragments, scorching or ground indentations? NO

13. How many other witnesses were there to the sighting? (Please provide names and addresses if possible)

Mr + Mrs Henthorn

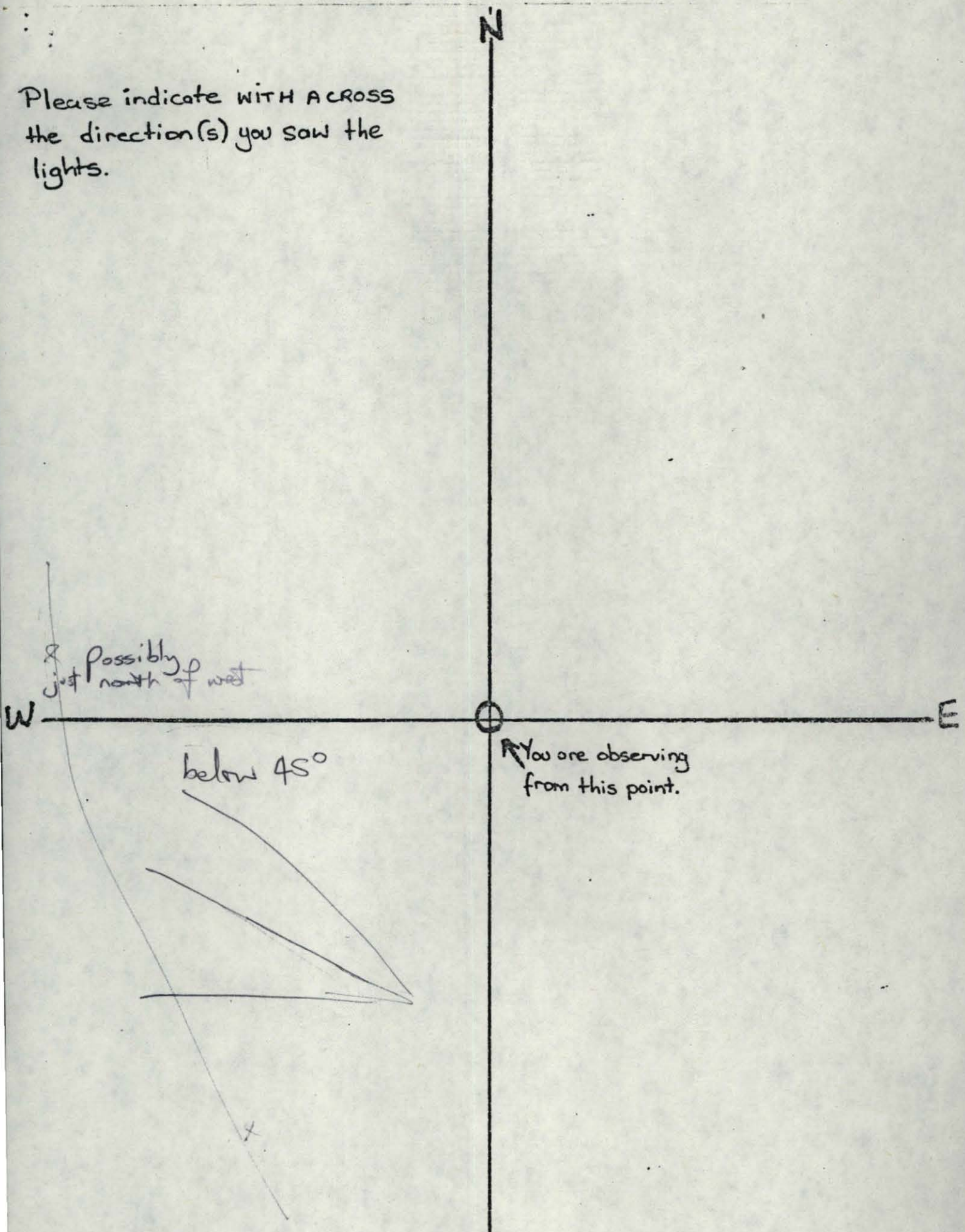
14. Have you previously made any reports to official authorities or UFO organizations regarding unusual aerial sightings? If so, give brief details of dates and circumstances.

FIRST

Debriefed by CINTO

Date _____ Signature B Biddyson

Please indicate WITH A CROSS the direction(s) you saw the lights.



PRINTS OF MR HENTHORN'S FILM - PRODUCTION DETAILS

ENLARGER: De Vere Dichromat No 1

PAPER: Kodak Ekatcolor 'E' 10" x 8"

ENLARGER LENS: 50mm 9238879 f no 2.8.

ORIGINAL FRAME NO	PRINT NO	FILTERS USED *		
3	1	65m 55y	@ 60 sec	T + F
4	2	65m 55y	"	T
		-5m		
		60m 55y	"	F
5	3	50m 30y	"	T + F
6	4	50m 30y	"	T + F
7	5	65m 55y	"	T + F
8	6	50m 30y	"	T1
		60m 45y	"	T2
		65m 46y	"	F
9	7	60m 40y	"	T1
		60m 50y	"	T2
		65m 55y	"	T3
		60m 55y	"	F

* KEY TO SYMBOLS

m = magneta filter
y = yellow filter
T = test print
F = final print

CPE staff attempted to get the background of all prints as close to black as possible in order to achieve some standard between the frames.

RUSSELL HENTHORN SIGHTING BENDIGO 24 MAY 83

PHOTOGRAPHY DETAILS

CAMERA: Fujico STX-1 Cable shutter release used

LENS: KIMUNAR 500M

CONVERTER: HANIMEX 2X

FILM: Fujicolor 35mm colour print film

F No constant for all frames F8

ORIGINAL FRAME NO	PRINT NO	APPROX TIME (START OF EXPOSURE) 24 MAY 83	LENGTH OF EXPOSURE
3	1	2058	15 sec
4	1	2058.30	10 sec
5	3	2100	8 mins
6	4	2109	10 mins
7	5	2119	20 sec
8	6	2120	10 min
9	7	2133	7 min

Frame 10, a 20 second exposure taken at 2140 hrs, did not produce an image.

During the photography sequence Mr Henthorn recentred the light for the middle of the focussing screen of his camera at the beginning of each exposure. This involved moving his camera downwards and to the left. For all frames the camera was kept horizontal. Mr Henthorn has advised that the camera was moved inadvertantly short after the shutter was opened for the exposure of frame 9.

5/6/1/AIR.
~~5/6/Air~~

UNUSUAL AERIAL SIGHTINGS BENDIGO VIC 20-22 MAY - INTERIM REPORT OF INVESTIGATING OFFICER

BACKGROUND

1. On nights of 20-21 and 21-22 May many people, estimated to number in hundreds, saw unusual lights in the skies over Bendigo and environs. Sightings also were made in the Shepparton area, at Eildon, Ballarat and as far south west as Warrnambool.

2. Initial reports, direct to the RAAF, and to other agencies, such as radio stations and newspapers, were highly consistent. Invariably the sightings were of bright white lights with smaller red and green lights (others reported blue as well) adjacent. The lights appeared to be spinning or rotating rapidly. In the Bendigo area a number of people reported observing upto nine lights simultaneously in various parts of the sky. The lights were mostly stationery and visible in most cases for long periods of time - upto three or four hours.

3. Possibly the prime witness, and certainly the person responsible for the wide publicity given to the sightings is Mr Mike Evans, a 17 year old disc jockey with 3BO, the local radio station in Bendigo. On Friday 20 May, Mr Evans was on duty between 1800-2359 hours. Following numerous calls from listeners he observed the lights himself, through his shift and until 0600 21 May. During the following evening, (21-22 May) Mr Evans photographed several of the lights.

RAAF RESPONSE

4. On Mon 23 May, CINTO became aware that, due to the ~~medical~~ media interest in the sightings and due to the sheer number of sightings, a comprehensive investigation would have to be launched. Arrangements were

made for CINTO to visit Bendigo on Tue 24 May - mainly to interview Mr Evans but also to collect other information relevant to the investigation. Travel restrictions confined the visit to one day.

Visit to Bendigo

5. In Bendigo, CINTO interviewed three witnesses to the sightings, Mr Evans, his mother Mrs Evans and Mr George Fish, a prison officer at Bendigo Gaol. CINTO also obtained photocopies of the three-hourly meteorological observations made at the Bendigo Gaol on behalf of the Bureau of Meteorology. The remainder of CINTO's time in Bendigo was taken up with press interviews.

Film of Sighting

6. Mr Evans handed the original negatives of his sightings to CINTO. Subsequently this film has been reproduced by CPE and the original plus duplicate negatives and prints have been returned to Mr Evans by registered post. Prints are being forwarded to DAFIS.

Results of Visit

7. The visit produced evidence:

a. of some radio ducting. Mr Fish between 0300 - 0345 on 22 May at Bendigo Prison on a Philips CU902 UHF radio was able to hear two prison officers conversing on small UHF radios (Philips SXR-W1) at Dhurrangile Prison near Shepparton.

b. that the lights were a long way from earth. Mrs Evans reported that she and her husband, on Saturday evening (about 1930 hours) observed a light they had seen on Friday in the south east sky. On saturday Mrs Evans made her

observation from Harcourt (15 miles south of Bendigo) whilst her husband was observing the same light from Bendigo. Despite the distance separating them on the ground, both observers had to look south east at between 30-45° to observe the light.

8. Publicity given to CINTO's visit caused about 100 people to contact HQSC (mainly CINTO and PRO) on Wed and thu with reports of sightings. Many calls were from the Bendigo area and related to the lights of the previous weekend. In almost all cases the callers requested a copy of the standard questionnaire. These have been dispatched and returns are beginning to arrive at HQSC.

Meteorological Conditions

9. The weather in Bendigo on the nights of 20-21 and 21-22 May was fine, still, cool and clear. Official meteorological records do not disclose whether or not there were inversions in the Bendigo area on the nights of interest. In Victoria, radiosonds, from which aerological diagrams are produced are made only at Laverton. The Laverton data does indicate the presence of inversions. Conditions across Victoria were similar on 20-21 and 21-22 May. It is not unreasonable to conclude therefore, that there may have been inversions in other parts of the State including the Bendigo area.

Planets, Stars and Satellites

10. To date the movements of planets, stars and satellites have not been plotted against the Bendigo sightings. CINTO is to meet the Public Astronomer for Victoria tomorrow and checks will be conducted once completed questionnaires have been returned and the information about time, direction, and elevation of sightings is correlated.

Air Movements/Radar

11. SMACO has advised that air activity in Bendigo during time of sightings was limited and that it varied whereas the lights appeared to remain relatively stationary for long periods. No spurious or unaccounted for radar 'paints' from the Bendigo area were recorded during the times of interest by Melbourne radar.

Laser Lights

12. One anonymous caller to the RAAF, claimed that the Bendigo lights were caused by a rock group experimenting with laser lighting. Mr Peter Bullen, the Principal of the Education section at the Science Museum has advised that, from his own experience and experiments, lasers can cause spectacular lighting effects and that, in his view they could have been the source of the lights seen at Bendigo. Although an anonymous caller repeated the claim on Fri 27 to Channel 7 and to a Melbourne radio station that lasers were responsible, this caller has not provided sufficient information for CINTO to investigate the claim.

Further Imagery

13. Further imagery of an unusual light in the sky above Bendigo was obtained by a technical school student Mr Russell Henthorn on Tue. This imagery (judging only from the newspaper photograph seen by CINTO) seems to be of better quality than that obtained by Mr Evans. Mr Henthorn used 35mm colour slide film whereas Mr Evans used 35mm black and white film. Mr Henthorn has indicated by phone that he is prepared to make his film available to the RAAF.

Comparison with Melbourne Sightings

14. On the night of 24-25 May, many people in the Melbourne area reported to the RAAF and to other agencies unusual lights mainly in the western and south western skies. Invariably reported mentioned one main

light which was white, pulsating with smaller associated green and red lights. Channel 7 made a video-tape of this sighting. Checks with the Bureau of Meteorology, with the Science Museum, and with SMACO at Tullamarine led CINTO to conclude that in all probability the main sightings was of the star Canopus being viewed through an inversion layer. Although the descriptions of the Melbourne and the Bendigo lights are similar, most people in Melbourne reported only one light whereas in Bendigo many people reported a number of lights.

National Security

15. CINTO has been unable to discover any evidence to date which suggests that the lights observed at Bendigo represent in any way a threat to national security. No unusual markings on the ground have been reported and no reports associating injury or damage to people, stock or property with the appearance of the lights have been received.

Conclusions

16. At this stage theseare tentative but reflect estimates based on information available:

a. The lights appear to represent no threat to national security.

b. The lights do not seem to have been projected by a flying object because no unusual radar returns were detected by Melbourne radar.

c. The light source(s) are either land based (eg, train headlights, possibly lasers) or from space (planets and stars). The lights have been unusual because of the unusual atmospherics that probably existed in the Bendigo area on the nights the sightings were made.

Recommendations

17. CINTO makes two recommendations:

a. that he be sent to Bendigo in the near future (possibly Thu 2 Jun) to collect Mr Henthorn's film and to talk at greater length and away from the glare of publicity with both Mr Henthorn and Mr Evans as well as other witnesses, whose questionnaire responses provide leads worthy of further investigation; and

b. that, once conveyed to DGOPS-AF, the main contents of this interim report be released through the Public Relations Office to the press.

Melbourne

1 June 1983

5/6/1/AIR.
~~5/6/Air~~

UNUSUAL AERIAL SIGHTINGS BENDIGO VIC 20-22 MAY - INTERIM REPORT OF INVESTIGATING OFFICER

BACKGROUND

1. On nights of 20-21 and 21-22 May many people, estimated to number in hundreds, saw unusual lights in the skies over Bendigo and environs. Sightings also were made in the Shepparton area, at Eildon, Ballarat and as far south west as Warrnambool.

2. Initial reports, direct to the RAAF, and to other agencies, such as radio stations and newspapers, were highly consistent. Invariably the sightings were of bright white lights with smaller red and green lights (others reported blue as well) (usually below) adjacent. The lights appeared to be spinning or rotating rapidly. In the Bendigo area a number of people reported observing upto nine lights simultaneously in various parts of the sky. The lights were mostly stationery and visible in most cases for long periods of time - upto three or four hours.

3. Possibly the prime witness, and certainly the person responsible for the wide publicity given to the sightings is Mr Mike Evans, a 17 year old disc jockey with 3BO, the local radio station in Bendigo. On Friday 20 May, Mr Evans was on duty between 1800-2359 hours. Following numerous calls from listeners he observed the lights himself, through his shift and until 0600 21 May. During the following evening, (21-22 May) Mr Evans photographed several of the lights.

RAAF RESPONSE

4. On Mon 23 May, CINTO became aware that, due to the ~~medical~~ media interest in the sightings and due to the sheer number of sightings, a comprehensive investigation would have to be launched. Arrangements were

made for CINTO to visit Bendigo on Tue 24 May - mainly to interview Mr Evans but also to collect other information relevant to the investigation. Travel restrictions confined the visit to one day.

Visit to Bendigo

5. In Bendigo, CINTO interviewed three witnesses to the sightings, Mr Evans, his mother Mrs Evans and Mr George Fish, a prison officer at Bendigo Gaol. CINTO also obtained photocopies of the three-hourly meteorological observations made at the Bendigo Gaol on behalf of the Bureau of Meteorology. The remainder of CINTO's time in Bendigo was taken up with press interviews.

Film of Sighting

6. Mr Evans handed the original negatives of his sightings to CINTO. Subsequently this film has been reproduced by CPE and the original plus duplicate negatives and prints have been returned to Mr Evans by registered post. Prints are being forwarded to DAFIS.

Results of Visit

7. The visit produced evidence:

a. of some radio ducting. Mr Fish between 0300 - 0345 on 22 May at Bendigo Prison on a Philips CU902 UHF radio was able to hear two prison officers conversing on small UHF radios (Philips SXR-W1) at Dhurrangile Prison near Shepparton.

b. that the lights were a long way from earth. Mrs Evans reported that she and her husband, on Saturday evening (about 1930 hours) observed a light they had seen on Friday in the south east sky. On saturday Mrs Evans made her

observation from Harcourt (15 miles south of Bendigo) whilst her husband was observing the same light from Bendigo. Despite the distance separating them on the ground, both observers had to look south east at between 30-45° to observe the light.

8. Publicity given to CINTO's visit caused about 100 people to contact HQSC (mainly CINTO and PRO) on Wed and thu with reports of sightings. Many calls were from the Bendigo area and related to the lights of the previous weekend. In almost all cases the callers requested a copy of the standard questionnaire. These have been dispatched and returns are beginning to arrive at HQSC.

Meteorological Conditions

9. The weather in Bendigo on the nights of 20-21 and 21-22 May was fine, still, cool and clear. Official meteorological records do not disclose whether or not there were inversions in the Bendigo area on the nights of interest. In Victoria, radiosonds, from which aerological diagrams are produced are made only at Laverton. The Laverton data does indicate the presence of inversions. Conditions across Victoria were similar on 20-21 and 21-22 May. It is not unreasonable to conclude therefore, that there may have been inversions in other parts of the State including the Bendigo area.

Planets, Stars and Satellites

10. To date the movements of planets, stars and satellites have not been plotted against the Bendigo sightings. CINTO is to meet the Public Astronomer for Victoria tomorrow and checks will be conducted once completed questionnaires have been returned and the information about time, direction, and elevation of sightings is correlated.

Air Movements/Radar

11. SMACO has advised that air activity in Bendigo during time of sightings was limited and that it varied whereas the lights appeared to remain relatively stationary for long periods. No spurious or unaccounted for radar 'paints' from the Bendigo area were recorded during the times of interest by Melbourne radar.

Laser Lights

12. One anonymous caller to the RAAF, claimed that the Bendigo lights were caused by a rock group experimenting with laser lighting. Mr Peter Bullen, the Principal of the Education section at the Science Museum has advised that, from his own experience and experiments, lasers can cause spectacular lighting effects and that, in his view they could have been the source of the lights seen at Bendigo. Although an anonymous caller repeated the claim on Fri 27 to Channel 7 and to a Melbourne radio station that lasers were responsible, this caller has not provided sufficient information for CINTO to investigate the claim.

Further Imagery

13. Further imagery of an unusual light in the sky above Bendigo was obtained by a technical school student Mr Russell Henthorn on Tue. This imagery (judging only from the newspaper photograph seen by CINTO) seems to be of better quality than that obtained by Mr Evans. Mr Henthorn used 35mm colour slide film whereas Mr Evans used 35mm black and white film. Mr Henthorn has indicated by phone that he is prepared to make his film available to the RAAF.

Comparison with Melbourne Sightings

14. On the night of 24-25 May, many people in the Melbourne area reported to the RAAF and to other agencies unusual lights mainly in the western and south western skies. Invariably reported mentioned one main

light which was white, pulsating with smaller associated green and red lights. Channel 7 made a video-tape of this sighting. Checks with the Bureau of Meteorology, with the Science Museum, and with SMACO at Tullamarine led CINTO to conclude that in all probability the main sightings was of the star Canopus being viewed through an inversion layer. Although the descriptions of the Melbourne and the Bendigo lights are similar, most people in Melbourne reported only one light whereas in Bendigo many people reported a number of lights.

National Security

15. CINTO has been unable to discover any evidence to date which suggests that the lights observed at Bendigo represent in any way a threat to national security. No unusual markings on the ground have been reported and no reports associating injury or damage to people, stock or property with the appearance of the lights have been received.

Conclusions

16. At this stage theseare tentative but reflect estimates based on information available:

a. The lights appear to represent no threat to national security.

b. The lights do not seem to have been projected by a flying object because no unusual radar returns were detected by Melbourne radar.

c. The light source(s) are either land based (eg, train headlights, possibly lasers) or from space (planets and stars). The lights have been unusual because of the unusual atmospherics that probably existed in the Bendigo area on the nights the sightings were made.

Recommendations

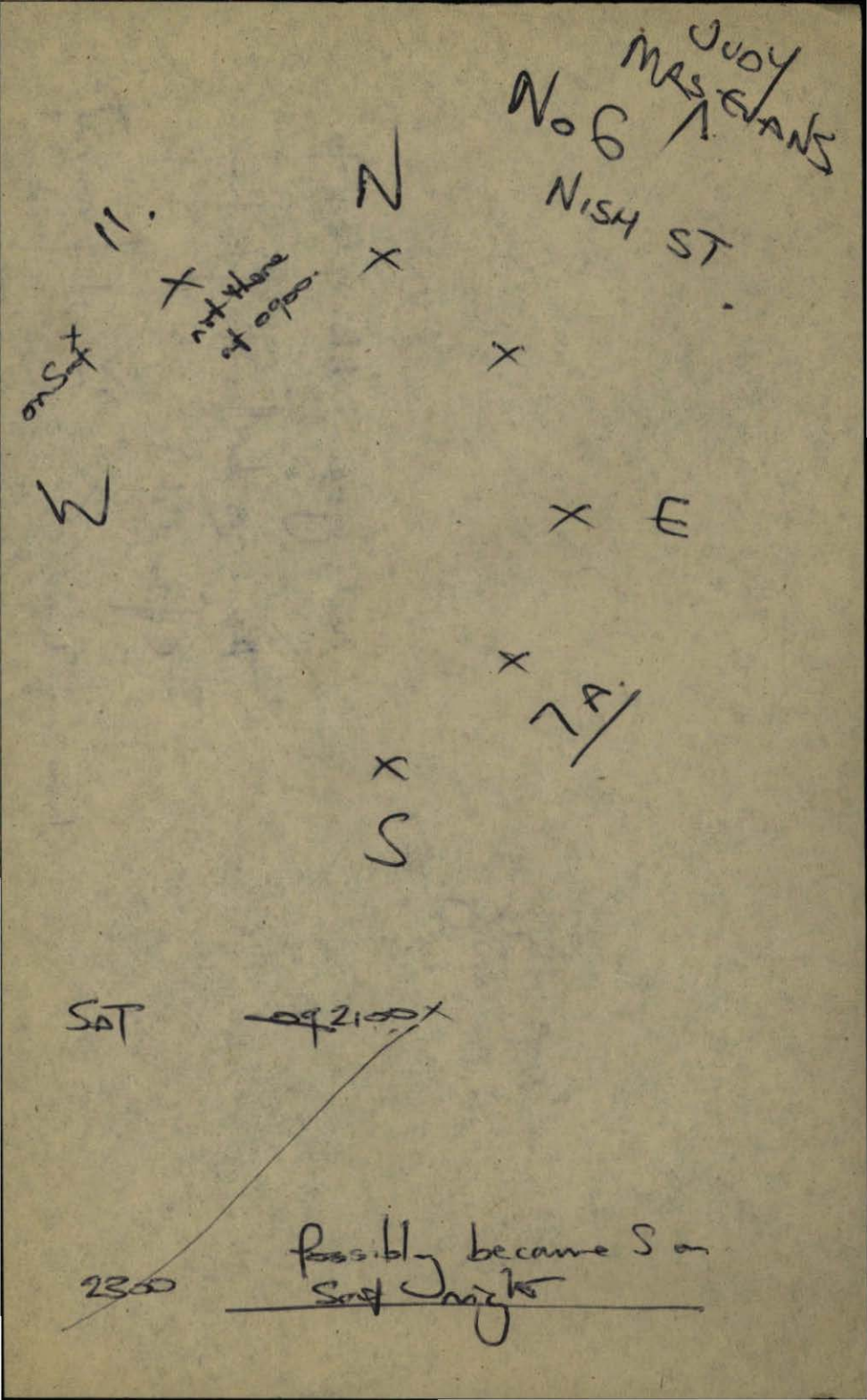
17. CINTO makes two recommendations:

a. that he be sent to Bendigo in the near future (possibly Thu 2 Jun) to collect Mr Henthorn's film and to talk at greater length and away from the glare of publicity with both Mr Henthorn and Mr Evans as well as other witnesses, whose questionnaire responses provide leads worthy of further investigation; and

b. that, once conveyed to DGOPS-AF, the main contents of this interim report be released through the Public Relations Office to the press.

Melbourne

1 June 1983



JUDY
MAS EVANS
No 6 1
NISH ST.

N

11.

not there at 0900.

on Sat

W

E

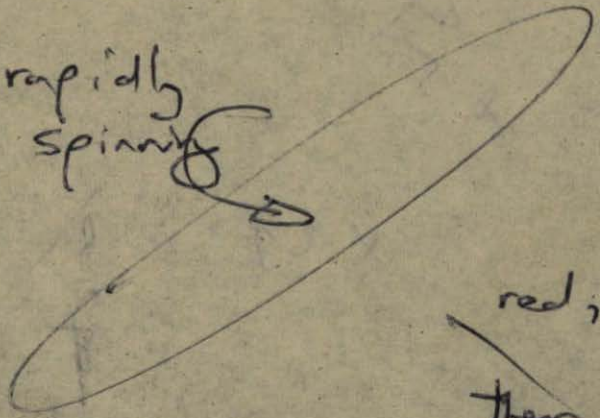
7A/

S

SAT ~~0~~ 2100

2300

Possibly became S on Sat night

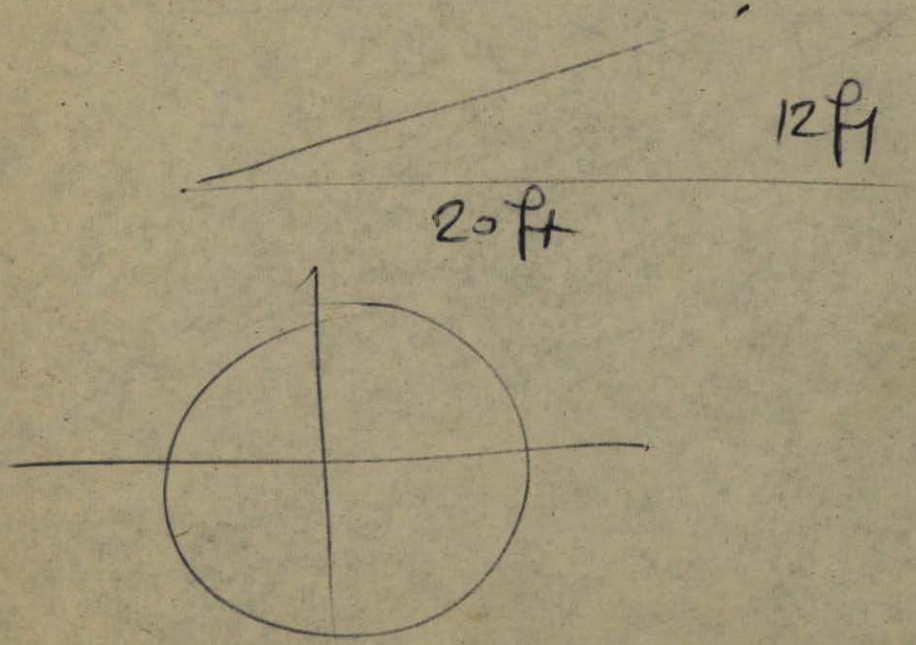


red, green, blue, white

then brilliant flashes

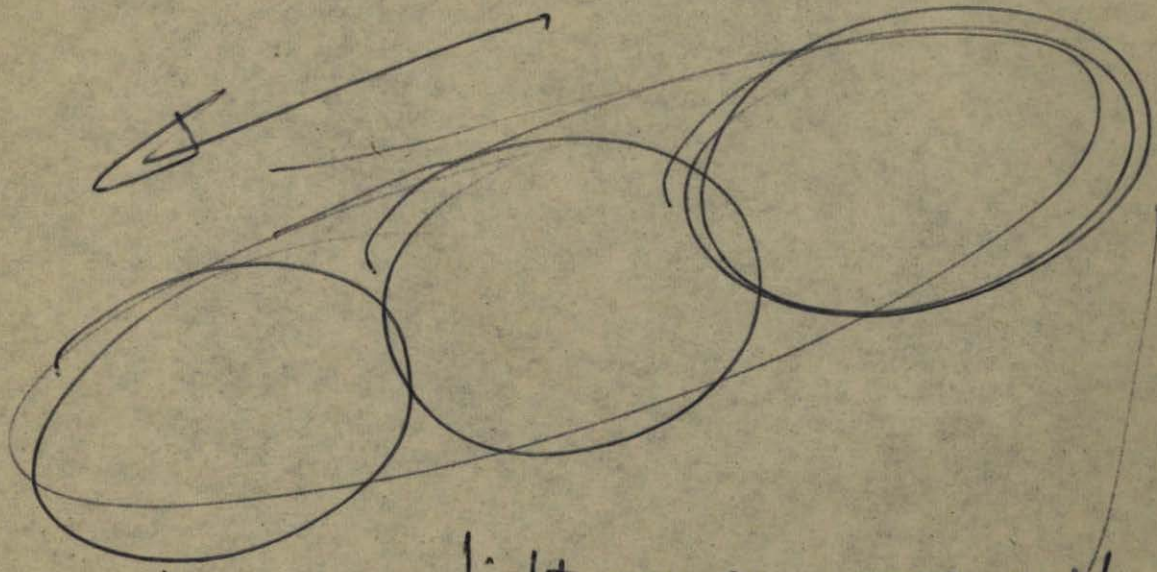
(floodlit)

low confidence $\approx 1/\text{minute}$


12 ft
20 ft

LT COL DOUG PAINE
3MD AW BRANCH

Anti-clockwise (?)



light sources appear all to focus at point of one.

NEGATIVE No.

CENTRAL PHOTOGRAPHIC ESTABLISHMENT
RAAF BASE LAVERTON

CLASSIFICATION

DATE

SUBJECT STARS by D. MARTIN

REMARKS Covering letter on 5/6/AIR pt.2 (20)
35 mm Slides in Carousel No. 18

PHOTOGRAPHER



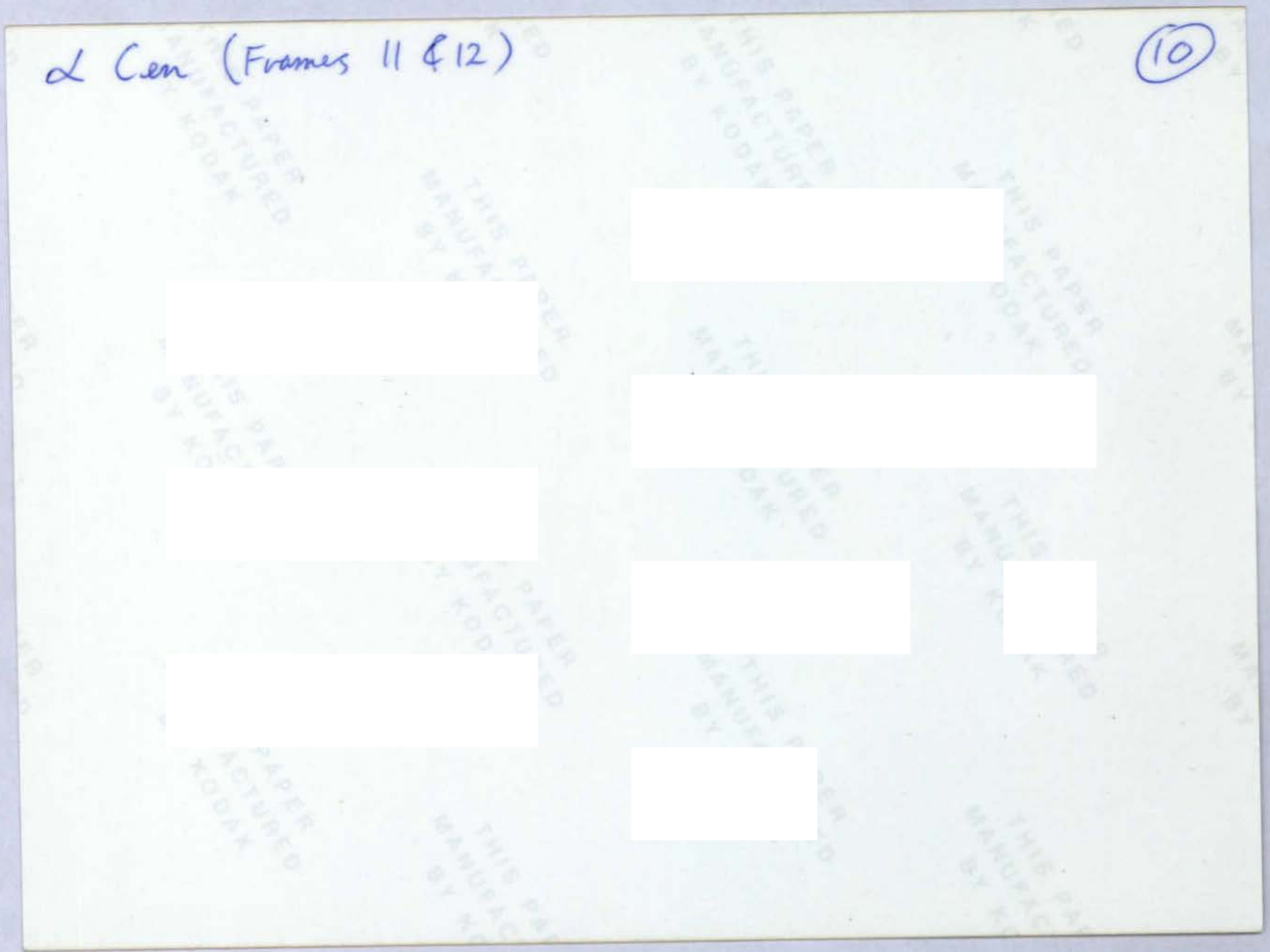
Jupiter (Frames 19 & 20)

(2)



α Cen (Frames 11 & 12)

(10)





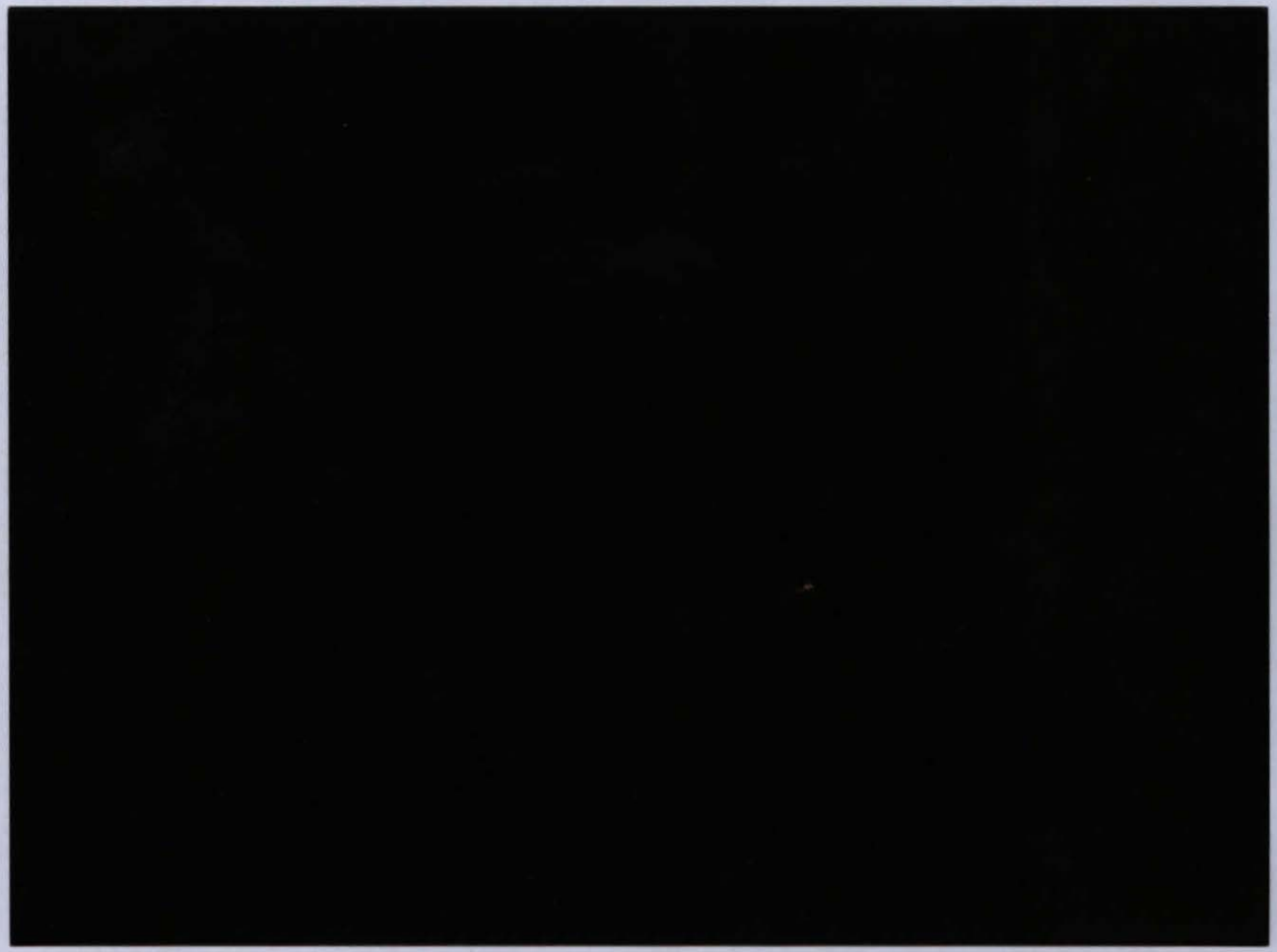
α Cen (Frames 9 & 10)

(11)



α Cen (15 & 16)

(6)



α Cen (Frames 21 & 22)

(3)



α Cen (13 & 14)

(5)



Jupiter (Frames 23 & 24)

(1)



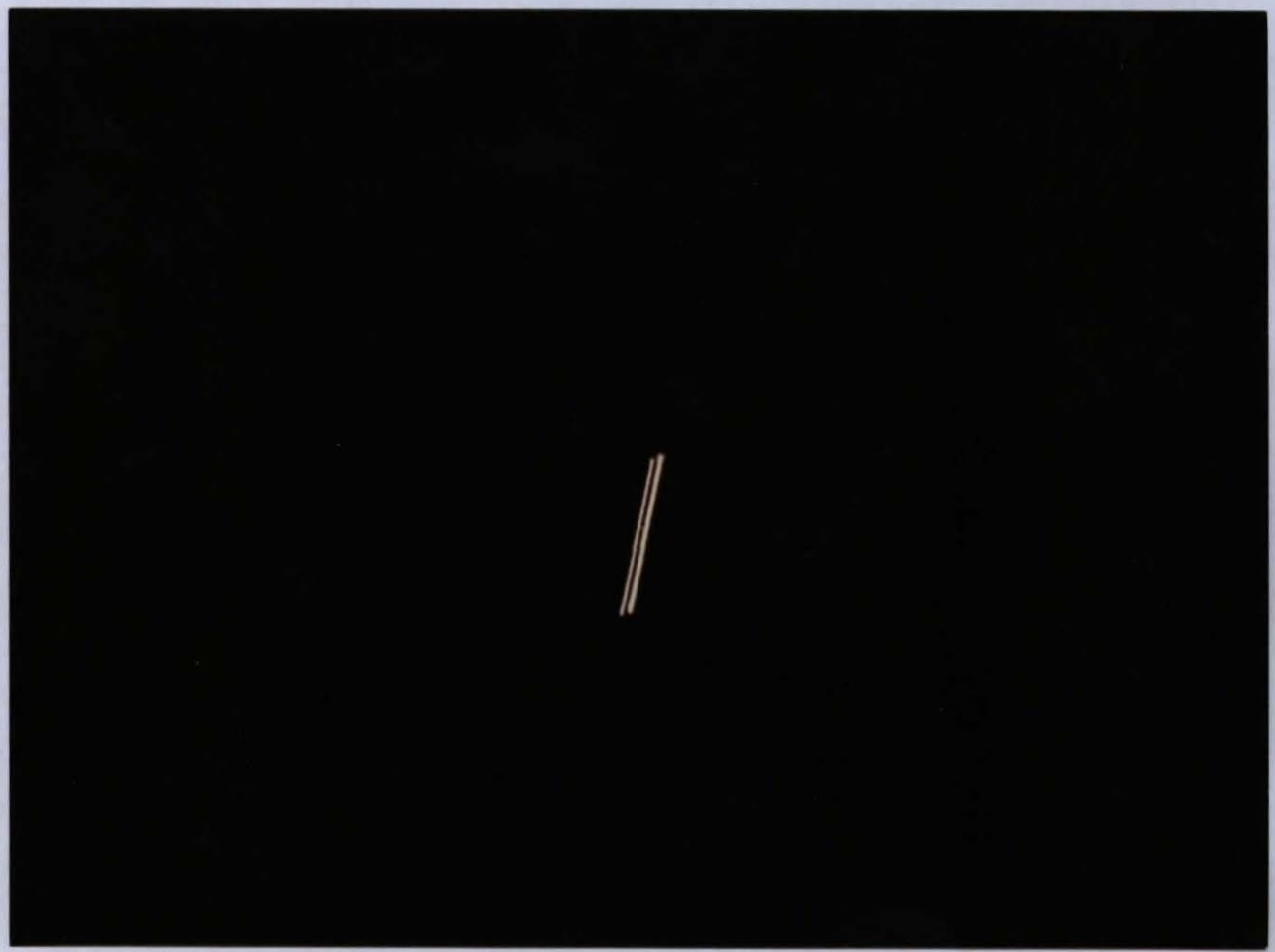
α Cen (Frames 1 & 2)

(9)



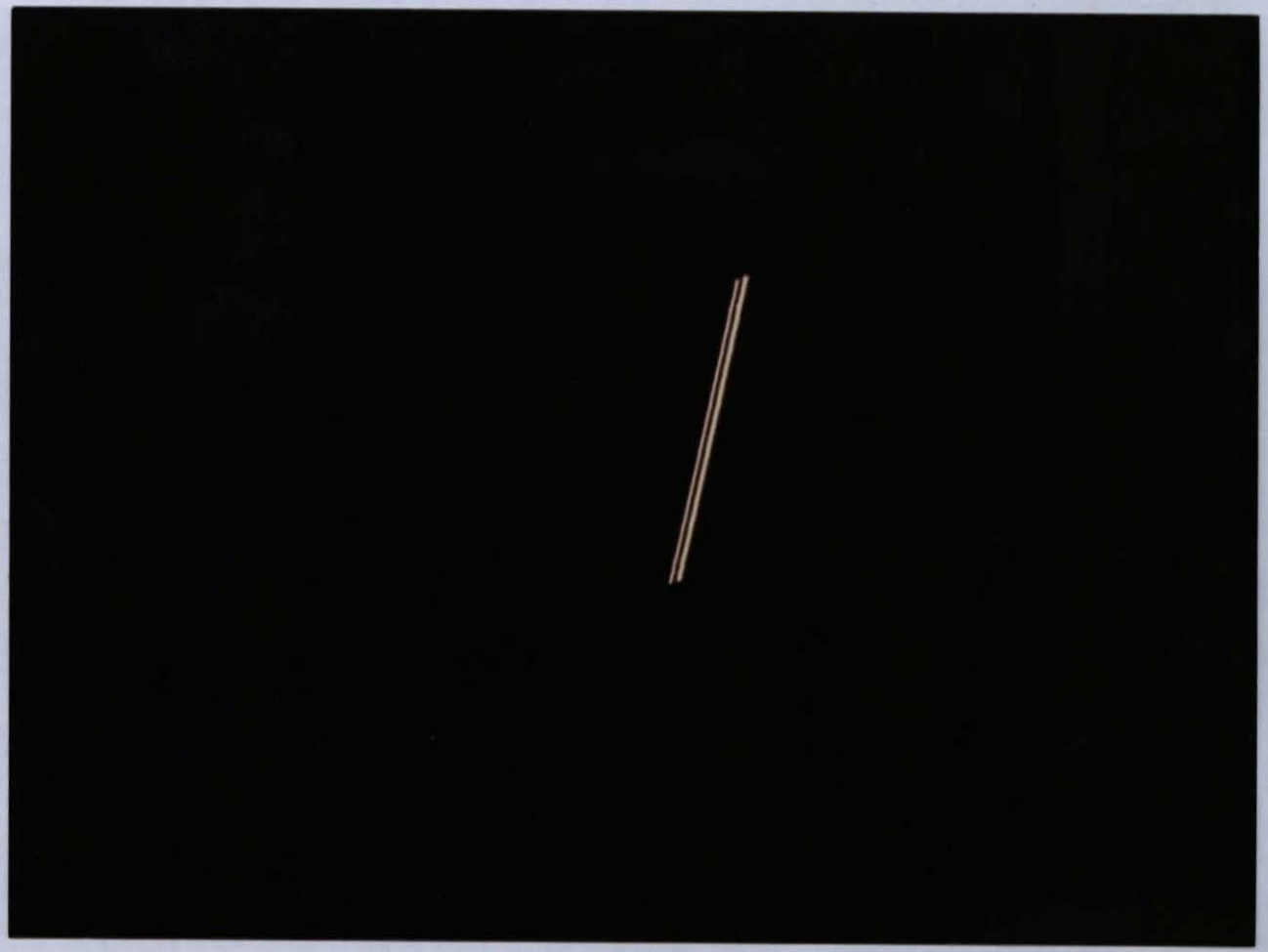
α Cen (Frames 3 & 4)

(8)



L Con (Frames 5 & 6)

(12)



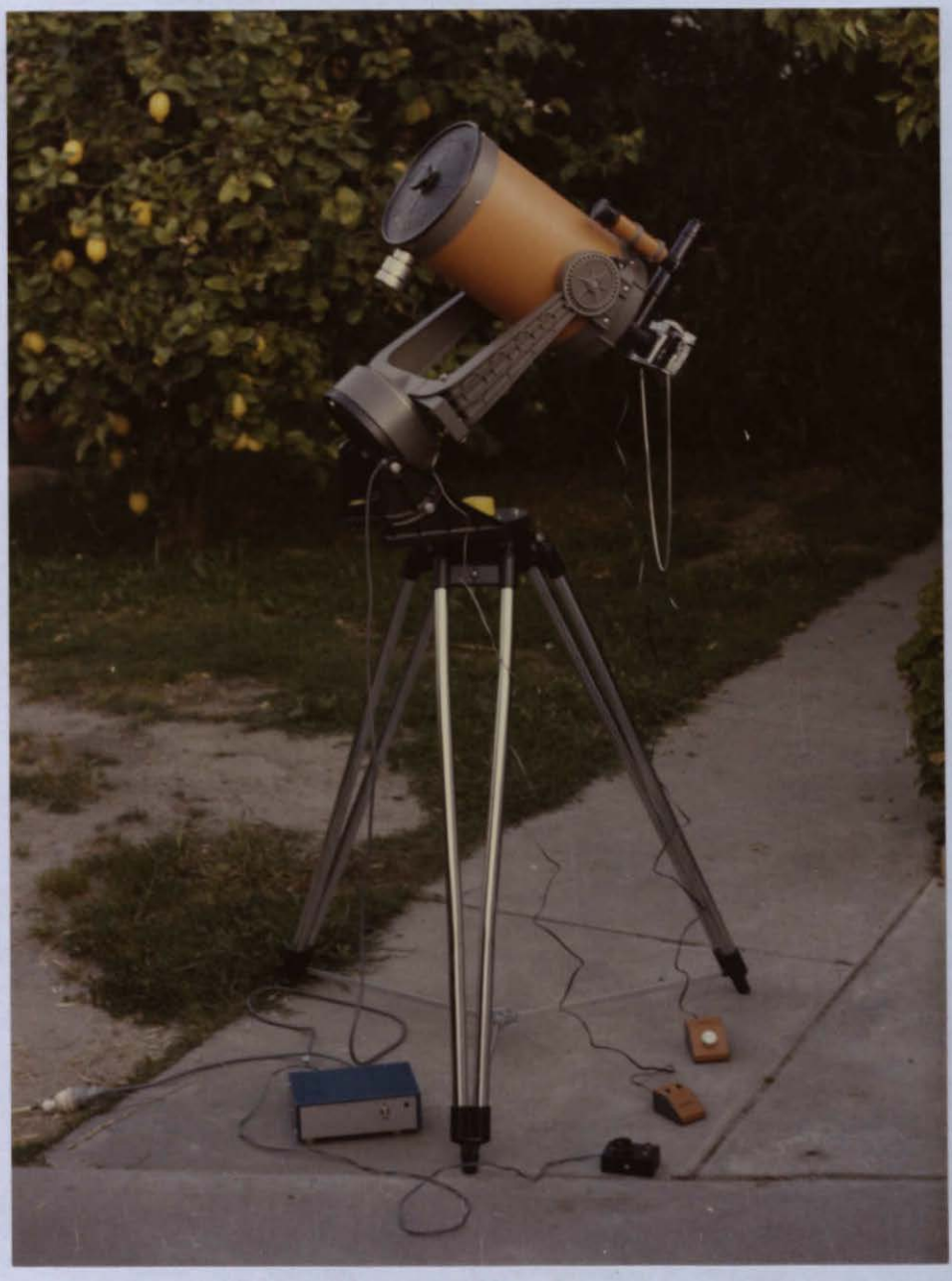
α Cen (Frames 7 & 8)

(13)



α Cen (Frames 17 & 18)

(7)



"The "Celestron 8" Compact Folded
Schmidt Cassegrain Reflector "Telescope"

REPORT TO ROLL NO. 2

(Kodak Vericolor II, Professional; 5025, Type 8 color negative film - ASA 125)

9/9/1983

Jupiter: F/5, f=1000mm, steady image(no adverse atmospheric effects)

(1) Frame No.s - 23 & 24
Exposure = 300s, Time began: $21^h\ 11^m.4$ AEST

Exposure was too long and the image exited the field of view. Note the small blue star (Omega^1 Scorpii) to the left. If both images are of a celestial nature, they should have exactly the same length trails. The 'trick' is that Omega^1 has exited first at the left side of the field of view, while Jupiter exited later and at the bottom.

a = 36°
A = 270°)

Also note two of the Galilean Satellites following beside Jupiter and the slight distortions in the trails caused by vibration of the photographic system.

(2) Frame No.s - 19 & 20 (Developped upside down)
Exposure = 180s, Time began: $21^h\ 15^m.9$ AEST

Also portrays Omega^1 and the satellites, but also Omega^2 Scorpii above as a red trail, and Jupiter did not exit the field of view this time. Although, it appears that the two stars did at different times.

N.B. The field of view in these two particular exposures was a circular format.

28/9/83

Alpha Centauri: F/10, f = 2000mm

	(3) 1/25 s,	$19^h28^m.4$ AEST
	*(4) 1/10 s,	38.6
	(5) 1/5 s,	40.8
	(6) 1/2 s,	41.8
a = 39°	(7) 1 s,	43.1
A = 217°)	(8) 2 s,	44.2
	(9) 5 s,	45.1
	(10) 10 s,	46.3
	(11) 25 s,	47.6
	(12) 50 s,	49.2
	(13) 100 s,	51.5

* One frame is missing, probably (4), but we have no way of knowing thisfor sure. Image was steady this night also.

Alpha Centauri is a binary star, hence the double trail.

SUPPLEMENTARY REPORT TO ROLL NO. 1

1 - Canopus: Note small red star nearby which has the same length of trail and is exactly parrallel. This is evidence that Canopus is not a 'UFO'.

2 to 19 - Venus: (see Jupiter)

27 - Vega: This object suffering from distinct but not severe colour inversion, transmitted specific colours which appeared in the bumps.

28 to 32 - Achernar: The closest of all the bright stars to the south celestial pole. Note the curvature of the trail. Achernar rose upwards east of the celestial pole. It can be seen from each consecutive photo that the angle is becoming more'flatter'. This angle is proportional to the HA of the star. Here, the HA is 18^h (270°). As Achernar gets closer to 0^h (360°,0°) then the trail will be flat, moving from left to right (east to west).

30 - At long f, more vibration evident.

31 - Begun off field of view.

33 to 37 - Jupiter: Long f used resulting in much vibration. Being a disk source and not a point source Jupiter portrays a thick line and not a thin line surrounded by "fuzz" as with the stellar objects. Venus is also disk source being a planet.

UNIFILE

500 S COLOURED

AUSTRALIA WIDE

Another mystery light

'Looks like picture'



● THIS is Flight Lt. Biddington, who was in Bendigo yesterday to investigate the reports of unidentified flying objects.

Strange lights in the sky were viewed over Bendigo again last night.

A Long Gully resident phoned the Advertiser to report the sighting of a bright light about 45 degrees from the horizon in the direction of Pyramid Hill.

The resident, who preferred not to be named, said he viewed the object for about 25 minutes from 7.30 pm. He described the object as a bright light shaped like a cigar.

"It was like the one in your paper this morning," he said.

"I had watched it for about five minutes when it was joined by a smaller object on its right.

"This one was completely different and emitted three different color lights from the bottom," he said.

The resident said he watched both objects through binoculars, then looked at the stars to compare the difference.

"They certainly were not stars," he said. "The lights were very bright, hundreds of people in the area must have seen them," he said.

Picture

The elongated shape of the unknown light in the sky published on the front page of yesterday's Advertiser was not due to its movement, according to one of those who had it under observation for some time.

Mrs Judy Evans of Nish St, Flora Hill, said the picture gave a good idea of the actual shape of the object.

In fact she said they looked like wedding rings, but she was unable to see a hole in the centre.

She said each of the objects appeared to be similar and seemed to be composed of a series of balls of light which flashed red, green and blue and had a constant white light.

Mrs Evans is the mother of Michael Evans. Michael took the picture which featured on the front page yesterday. Mrs Evans said she looked at a number of the objects through binoculars.

Probe

In Bendigo yesterday Flight Lt Bret Biddington of the RAAF's operations branch, Headquarters Support Command at Victoria Barracks, talked to a number of people about sightings.

He said he had collected meteorological data and was now "at the beginning of some evidence." Pressed he said he was not anxious to go into detail because what he had discovered so far was tentative by, there had been some unusual UHF transmissions on the nights involved.

He said he was particularly anxious to hear from people who had made sightings, and he may be contacted at RAAF headquarters or by telephoning (03) 697 3778.

He left late yesterday to gather more evidence in Ballarat.

In Melbourne yesterday the president of the Victorian UFO Research Society, Mrs Judith Magee, said the society had sent a man to Bendigo to investigate the sightings. She described the sightings as "exciting" and said the society had received reports from people who had seen them from as far away as Warrnambool and Monbulk in the south and Merrigum in the north. She did not rule out a visitation from outer space.

THIS PAGE IS THE REVERSE OF THE PREVIOUS PAGE
AND MAY NOT BE RELEVANT TO THE FILE

WHILE Victoria's Prices Commissioner, Dr Fels, is preparing to find out why Bendigo's petrol prices are higher than almost everywhere else in the state, another inquiry has been occupied in Paris looking at a rather larger problem.

It was the energy situation, world-wide.

The governing board of the International Energy Agency — made up of ministers from various governments around the world — is clearly most concerned about oil and gas, convinced apparently these fossil fuels are not going to run out for a while yet.

In their perspective, nuclear power comes third and the "development of new and renewable sources of energy" last.

This is hardly remarkable. The search for artificial and renewable fuels is of immediate concern only to countries like South Africa whose oil supplies are under obvious threat.

The others look forward with hope, buoyed up by forecasts such as the one given to them that in the year 2000, oil would still constitute more than 75 per cent of all OECD energy imports.

They did, however, recommend rapid and where appropriate, co-operative development on an economic basis of indigenous energy resources — fossil fuels, nuclear energy, hydro-power and other renewable energies — to the maximum possible extent consistent with environmental and social factors and the need to secure supplies beyond the turn of the century.

They concluded finally there had to be a balanced approach which put each aspect of energy policy into its proper perspective, including:

Improved energy efficiency and appropriate pricing and fiscal regimes.

Further expansion of the production, use and trade of coal and other solid fuels.

A major and increasing role for nuclear power in many countries.

Obtaining the advantages of increased use of gas on an acceptably secure basis.

Continuation of efforts to improve energy security in oil and

Development of new sources of energy.

PERMS $21



yesterday explained Bendigo's high petrol prices from a personal view point.

The claim follows a State Government announcement an inquiry will be held into Bendigo petrol pricing, but the answer is not that simple

As far as the retail petrol industry is concerned the Government should control the petrol price as it leaves the refinery gate, but that would mean the end of discounting.

The retail industry contention is Bendigo prices are not dear . . . it's just that other areas are cheaper.

Bendigo, unfortunately ber" to cart in cheaper fuel and start a price war

Cheaper

Mr Meade said in areas like Ballarat and Geelong "jobbers" are bringing in petrol and selling it to retailers at about two or three cents cheaper than the wholesalers can supply it.

The "jobbers" are independent truck drivers who buy the fuel from the major refineries in Melbourne and cart it into the country to sell to individual, usually independent service station owners.

Mr Meade said this is where the problem starts and has called for Government control of the price at the refinery gate.

Bendigo MLC, Mr John oil companies should be allowed a marginal variation to compensate for world-wide market forces.

"Not only should a wholesale and retail price be set, but the price should also be set back at the refinery door, because that's where the skulduggery starts," he said.

Control

Two major and several minor wholesalers control the Bendigo petrol market.

Ray Jackson is the biggest supplier, with agencies for Esso, Golden Fleece and Caltex.

Graeme Bishop is also a big operator but his firm mainly supplies primary producers and industry.

Max Meade, at Mobil, Bill Bury, with BP and Total are the smaller operators.

All seem reluctant to start a price war of their own volition and as Bendigo seems to be out of range of "jobbers" there is no price relief in sight.

One unnamed industry spokesman put this down to: "Maybe the dealers are being sensible about it."

Stability

"A lot of retailers are close to going out of business. At least we have some stability in the business."

According to Mr Radford, Geelong retailers, within "jobber" range, recently went on strike to bring attention to their plight.

He said petrol station proprietors were powerless to discount without getting cheaper petrol from a "jobber" as they were always expected to pay cash for the fuel before they put it into their storage tanks.

"The small retailers operate on such small margins anyway . . . no one gets rich at the expense of the oil companies," he said.

"He just can't do it. Nor should he be asked to do it.

"From my point of view, I'm not about to start a price war. But if it does happen I'll be straight on the phone to Mobil to try and protect my business," he said.

He said he could take a tanker to the oil refineries and become a "jobber" himself, but had to remain "a businessman" in the eyes of the oil companies.

He said it was up to the Government and the oil companies to control the monster that had been created.

"If discounting happens here, as David Kennedy and others suggest, then it will be the small people who are shaken out," he said.

He pointed out the oil companies sold the cheaper petrol to areas where they had little influence and at times of glut.

"You've really got to look at the marketing. Do you fly empty or keep discounting and not make quite as much on each sale," he said.

SWITCH-ON TOMORROW

The Country Roads Board expects to have this new set of lights at the corner of McIvor Rd and Kennedy and Sternberg streets, operating tomorrow.

District engineer Mr Tom Glazebrook said the intersection would be a lot safer especially for traffic crossing the highway when the lights are finally switched on.

The project cost about $130,000 and Mr Glazebrook said another $30,000 would be spent when the final layer of asphalt is applied to the intersection.



will cover all lians for doctors fee and public hospit care, AAP reports.

Health Minister, D Blewett announced th first stage of the set ting up of the schem

Inqu

A motorcycle police- yesterday recalled his harrowing attempt to guide a Telecom uti- lity through the Ash Wednesday bushfires.

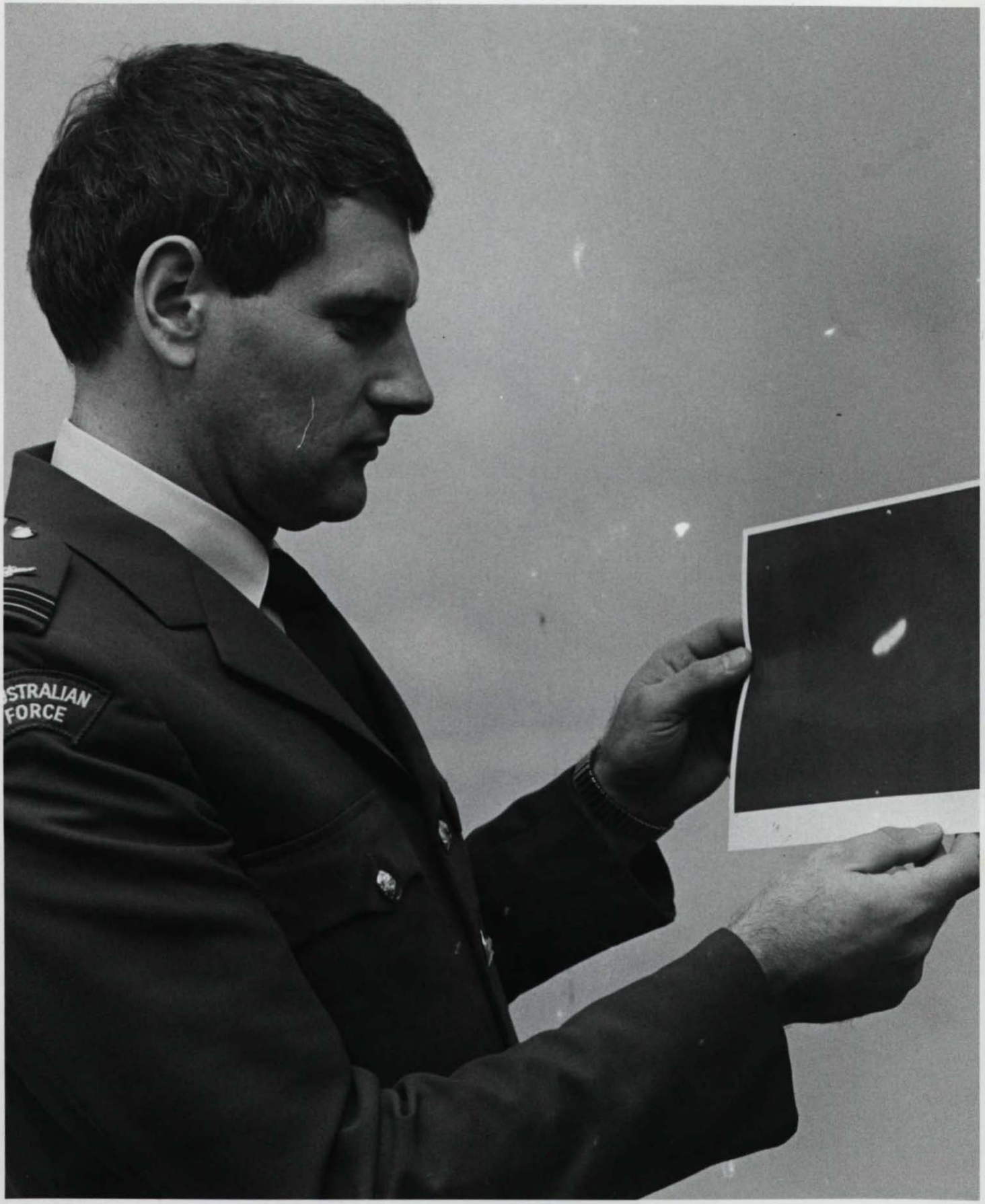
Sen-Constable Steve John Williams was giving evidence on the second day of Coroner Mr Ton Ellis' inquest in Geelon into the deaths of thre men who died in the bush fires, including Ilie Mierla 51, a Telecom technicia of Colac.

Constable Williams tol the inquest he was con fronted by a solid wall o flames on the road fro Lorne to Dean's Marsh south of Geelong, on th afternoon of February 1

The fire's front was rac ing through the bush, wit flames "more than 10 met res above the trees. It wa a solid wall of flames trav elling at great speed."

He said he was headin back to Lorne when h saw a Telecom vehicle an flagged it down. The dri ver appeared to be in hi 50s.

Constable Williams sai he told the man he coul


STRALIAN
FORCE

Flight Lt. Bret Biddington

Of R.A.A.F Intelligence

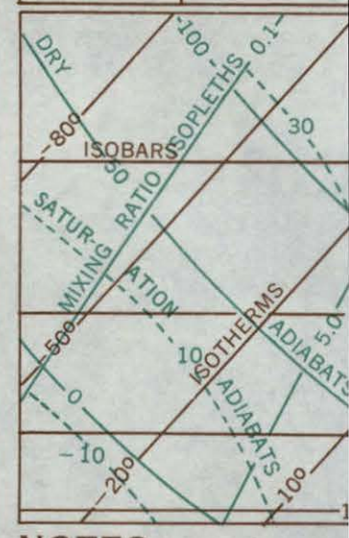
BUREAU OF METEOROLOGY

AEROLOGICAL DIAGRAM

SKEW T - LOG P AEROLOGIC

STATION AAD

INTERNATIONAL INDEX NUMBER	
HOUR GMT	1100Z
DATE GMT	22 5 83
PRESSURE MB	HEIGHT OR TH
TROPOPAUSE	
FREEZING LEVEL	10,000
100	
200	
200 - 100	
300	
300 - 200	
500	
500 - 300	
700	
700 - 500	
850	
1000	
1000 - 500	
1000 - 700	



NOTES

1. IF THE SOUNDING REACHE 100 MB LEVEL RESULTS SH PLOTTED USING PRESSURE BRACKETS [100]
2. FOR FURTHER EXPLANAT METEOROLOGICAL NOTE N OF THE F160.

ICAO STANDARD ATMOSPHERE ALTITUDE
THOUSANDS OF METRES
THOUSANDS OF FEET

Revised May 1980

BUREAU OF METEOROLOGY

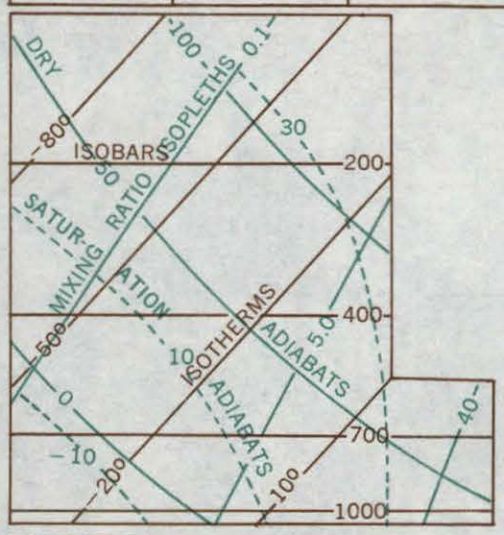
AEROLOGICAL DIAGRAM

F 160
Stock No. 400160

SKEW T - LOG P AEROLOGICAL DIAGRAM

STATION AAAD

INTERNATIONAL INDEX NUMBER		
HOUR GMT / DATE GMT	1100Z / 22 5 83	Z
PRESSURE MB	HEIGHT OR THICKNESS METRES	
TROPOPAUSE		
FREEZING LEVEL	10.000	
100		
200		
200 - 100		
300		
300 - 200		
500		
500 - 300		
700		
700 - 500		
850		
1000		
1000 - 500		
1000 - 700		



NOTES

1. IF THE SOUNDING REACHES ABOVE THE 100 MB LEVEL RESULTS SHOULD BE PLOTTED USING PRESSURE VALUES IN BRACKETS [100]
2. FOR FURTHER EXPLANATION SEE METEOROLOGICAL NOTE NO. 5 - USE OF THE F160.

INVERSION

INVERSION

Revised May 1980

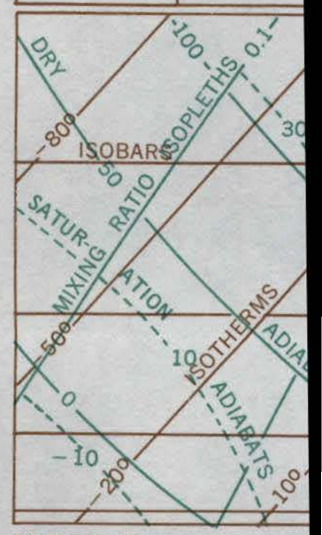
BUREAU OF METEOROLOGY

AEROLOGICAL DIAGRAM

SKEW T - LOG P AEROL

STATION LAVE

INTERNATIONAL INDEX NU	
HOUR GMT	1100
DATE GMT	22 5 82
PRESSURE MB	HEIGHT OF
TROPOPAUSE	
FREEZING LEVEL	
100	
200	
200 - 100	
300	
300 - 200	
500	
500 - 300	
700	
700 - 500	
850	
1000	
1000 - 500	
1000 - 700	



NOTES

1. IF THE SOUNDING REAC 100 MB LEVEL RESULTS PLOTTED USING PRESS BRACKETS [100]
2. FOR FURTHER EXPLAN METEOROLOGICAL NOT OF THE F160.

ICAO STANDARD ATMOSPHERE ALTITUDE
THOUSANDS OF METRES
THOUSANDS OF FEET

Revised May 1980

U OF METEOROLOGY

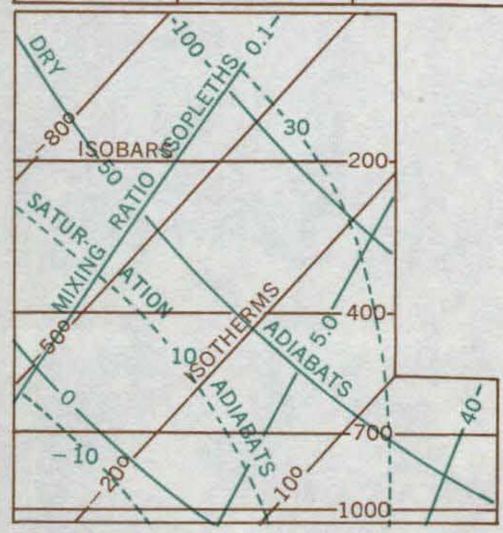
AEROLOGICAL DIAGRAM

F 160
Stock No. 400160

SKEW T - LOG P AEROLOGICAL DIAGRAM

STATION LAVERTON

INTERNATIONAL INDEX NUMBER		
HOUR GMT / DATE GMT	1100 Z / 22 5 83 Z	Z
PRESSURE MB	HEIGHT OR THICKNESS METRES	
TROPOPAUSE		
FREEZING LEVEL		
100		
200		
200 - 100		
300		
300 - 200		
500		
500 - 300		
700		
700 - 500		
850		
1000		
1000 - 500		
1000 - 700		

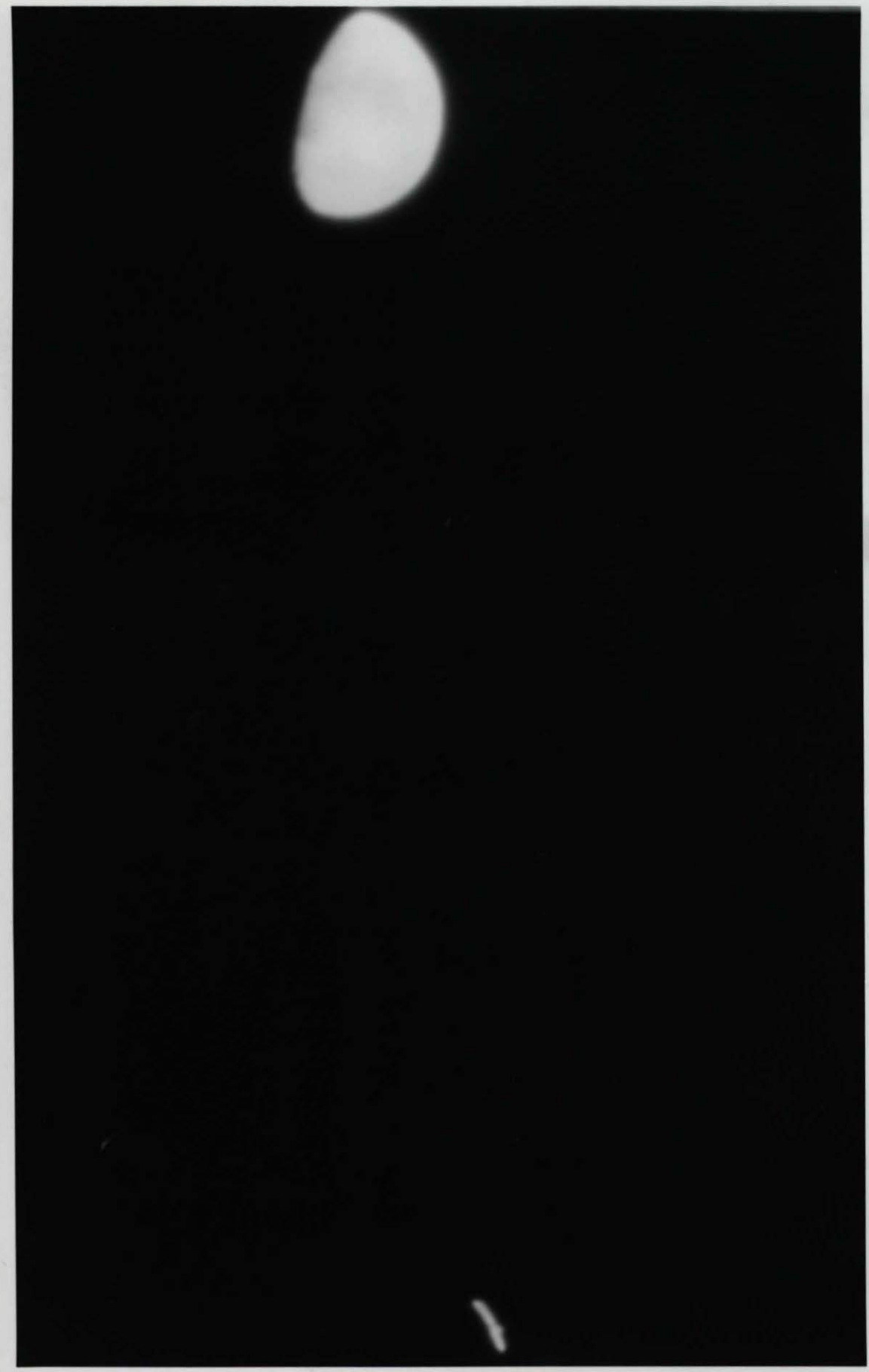


NOTES

1. IF THE SOUNDING REACHES ABOVE THE 100 MB LEVEL RESULTS SHOULD BE PLOTTED USING PRESSURE VALUES IN BRACKETS [100]
2. FOR FURTHER EXPLANATION SEE METEOROLOGICAL NOTE NO. 5 - USE OF THE F160.

(200--100) (300--200) (500--300) (700--500) (1000--500) (1000--700)

May 1980



UFOs – FACT OR FICTION

ballarat news
6 Camp St. Ballarat. Ph: 31-3833

Vol. 10. No. 30. Wednesday, August 24, 1983—20 pages

Registered by Australia Post. Publication No. VAC 5992

An alleged visitation of Unidentified Flying Objects — UFOs — occurred in the district again this week with various people reporting strangely similar objects in our western skies.

Several people in Ballarat, many more in Maryborough and Bendigo reported seeing objects in the sky and they seemed to come in a new shape — triangular — instead of the traditional saucer shape.

And this recalls a strange sighting — well-corroborated — in New Zealand a few years ago by a Channel 0 (now Channel 10) reported, Quentin Fogarty.

He filmed a number of objects from an aircraft and his films were sent to America to be computer-processed frame-by-frame.

Instead of the more obvious blobs of light, the processors concentrated on a tiny pinpoint of light in the background.

It was greatly enlarged and turned out to be the shape of a green triangle.

This was the first reported sighting of this type of UFO.

But the observers in our districts last weekend described the objects they saw as triangular and — in one case — green.

Mrs Davies of Beaufort was driving home from Melbourne on the Western Highway near Pyke's Reservoir with her daughter Debbie when they saw a bright object like a star ahead of them.

First, it kept its distance ahead, then seemed to be coming towards them (or them towards it). As it grew bigger, Debbie said it took the form of a large "banana" but wider in the middle, which puts it in the triangle category.

Mrs Davies had more chance of concentrating on the object as Debbie was driving.

She said, "it had about 10 lights underneath it and could have been described as triangular in shape. Some of the lights were colored. At first we thought it was a star, but it soon became obvious it was something else entirely. It's a mystery to me. We did not hear about the other reported sightings until the next morning, so we were not affected by them. I would just like to know what it was, that's all."

Asked if she was frightened, Mrs Davies said, "Not at all, only interested."

A similar sighting was reported to Radio 3BA by a woman at Pax Hill, the Scout camp just out of Ballarat.

She described the object as a single light, triangular in shape, with orange and green lights and what appeared to be a searchlight shining down on the clouds from above.

A few weeks ago, similar objects were reported by Melton police who actually tracked one of the objects for four hours. It had first been detected on airport radar which asked the police to investigate.

What the attraction for these objects — which have been seen by many local people — is in the western area of Victoria is unexplained, like the objects themselves.

Various theories have been put up, including aircraft (fixed wing, helicopters and gyrocopters), balloons, meteorites, etc., but no explanation has yet proved satisfactory, given all the factors involved.

One remarkable feature is the similarity in the descriptions by people in widely scattered districts. There is no evidence of collusion.

People who have seen them are convinced there is something strange in our skies, but what it is, nobody knows, or is prepared to say.

On the same night the Ballarat sightings were reported, poeple in Maryborough said they saw eight triangular shaped lights clustered together over their city. They said they were flashing orange, green and white.

Similar reports were made a few months ago to Bendigo radio station 3BO by people in that city.

FOOTNOTE: Do UFOs, if they exist, exert an influence on the minds of men? On the same night they were reported over Ballarat a man who had taken great interest in the phenomena and claimed to have seen UFOs on more than one occasion, allegedly committed a firearms offence that could have been a lot more serious. The woman involved is still in hospital.



● *It is 11 o'clock on Sunday night and everything is normal in the City of Ballarat. Or is it? People who saw strange objects in our skies are convinced there are alien visitors sharing our space.*

A strange story emerged in Ballarat some years ago, exactly a week before amateur pilot Frederick Valentich disappeared over Bass Strait in his single engined Cessna and has not been since, nor has a particle of wreckage been discovered.

Then studio manager of Radio 3BA, Geoff Sanders, interviewed three young people who claimed to have seen a "flying saucer" in Norman Street.

It was the early hours of a Saturday morning as they were driving home, having been bogged for some hours further out. Suspecting a hoax, Sanders questioned them carefully, posing the same questions to each of the three to see if the answers varied.

He would get them talking about something, then he would suddenly revert to a previous question, but invariably the answers checked out correctly. In essence, what they saw was a machine of the traditional saucer shape about 100 ft wide. It was illuminated around the edges and had a black, round patch underneath.

It was that patch that was most significant, because Valentich described a similar patch a week later.

He had taken off to fly to King Island to collect a cargo of crayfish. Full details of his last message have still not been released by the authorities, but it is known he said he was being harassed by something ("It is not an aircraft") hovering above him.

He described it as having a black, round patch underneath. How did the Ballarat trio see a machine with a similar patch a week earlier if it did not actually exist?

After Valentich stopped talking, the tape disclosed a scraping, metallic noise . . . and then there was silence, which has lasted to this day.

On that same night there were literally hundred of sightings reported all over Melbourne and Geelong.

Two entire cricket teams saw two objects overhead during their match; a bank manager driving from Geelong to Melbourne was followed by a "saucer" which tallied in some details with that described by the Ballarat trio and Valentich.

A woman at Dromana described a UFO over the bay describing "impossible manoeuvres" at the time of Valentich disappeared.

And shortly afterwards a fisherman photographed an object arising from sea near Cape Otway.

All these details are verifiable from newspaper reports of the time.

It would be an odd person who would say that nothing strange exists in our skies — but what?

As Shakespeare would say, "That is the question."

CHICKEN Special

10 pieces
of OLLIE'S Golden Fried Chicken
& a large chips



$7.50

The real taste in CHICKEN

Ollie's FAMILY RESTAURANTS
802 STURT ST. PH: 32 1111.
HOWITT ST. WEND. PH: 39 4595.

A SELECTION OF COUNTRY PROPERTIES



CLUNES — 10 ACRES

A magnificent ranch style home on 10 acres with views all round. 4 double bedrooms, lounge with canopy fireplace, dining room, kitchen (dinette) and a huge rumpus room (billiard table included). Kitchen has electric WO and HP and combustion stove for country flavor. The 10 acres is well set up with house yard, fowl pens, cow shed, large dam and 4¾ acre paddock. For country living with style, this home has everything.
$69,000.

CLUNES—¾ ACRE



3 bedrooms (BIRs to master, large kitchen/dining (elect. cooking) lots of storage and work benches, delightful lounge has wood fire plus elect. space heater (large windows allow great views over countryside). Bathroom with sep. shower, bath and vanity unit. Int. toilet and laundry. On a ¾ acre block. 2 sheds, fernery and above ground pool.



SOLE AGENTS — $38,000 (Great value here)

EDGAR BARTROP REAL ESTATE
Contact:
'The People Who Know Real Estate'
54 LYDIARD ST. STH.,
TELEPHONE 311 011.
"A real estate office since 1878"
After hours sales enquiries:
Frank Pitts 32 2513, Robert Maxwell 31 7703,
Denis Williamson 35 6345,
David Strickland 32 4214.

SMYTHESDALE
REDUCED TO
$35,000
3-year-old home on extra large allotment. 3 bedrooms (2 BIRs and 1 BI dressing table). Large kitchen, gas cooking, sep. dining. Relaxing lounge with pot belly stove/heater set on brick pavers. New carpets and lino throughout, roomy bathroom wiht bath, sep. shower and vanity unit. Laundry and int. toilet. Rear balcony with great views of the countryside. Sole agents.

THIS PAGE IS THE REVERSE OF THE PREVIOUS PAGE
AND MAY NOT BE RELEVANT TO THE FILE



— ALSO AVAILABLE —

Water Storage Tanks from 450 to 18,000 litres In Life-Long Fibreglass

A. & J. CARTLEDGE Pty. Ltd.
201 LONSDALE ST.
BALLARAT. PH: (053) 35 6253.

others in a similar situation, problems peculiar to single parenting.

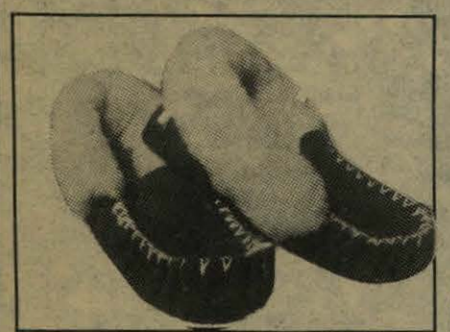
Welfare was another important item and this can be carried through to State level.

Free legal advice is another plus to members of PWP.

The list of services and benefits to members is long.

Why not ring J Shelton on (053) 246 236. He will be happy to explain the benefits and the many programs available for both parent and children.

Keep Dad's feet warm this Father's Day



with a pair of genuine
SHEEP SKIN & SUEDE
MOCCASINS

Also
SHEEPSKIN JACKETS, UGG BOOTS, MITTENS.

FATHER'S DAY SPECIAL Moccasins from $13.50

Skin, Ski & Surf

Your one stop winter warmth shop.

CNR. HUMFFRAY & GRANT STS. PH: 31 4178

was an invitation to shop again. W.A.— (Wendouree).

●●●

TO the heartless motorist who knocked down and killed my son's little dog on Saturday August 6 in Skipton Street. My seven year old was standing there and had to witness his pet's death while you sped on by without a backward glance. It could have been him. Would you have stopped then? — J.W. (Sebastopol).

●●●

TO the four wonderful gentlemen that helped push a white Morris 1000 UP Dana Street hill when the driver got into difficulties and the hand brake failed. My mother-in-law and I truly thank you. And we hope you will be all rewarded for your help when it was so desparetly needed. Sorry I didn't stop once I got to the top of the hill. C.C. and D.C. — (Ballarat).

●●●

TO the accessors of the Ballarat insurance company which after a cash theft claim were not prepared to pay out in full for the amount stolen despite the fact that it was covered by insurance. The company sent a letter making an offer of a considerably smaller amount and recommending that it be accepted because it was better than nothing. After treatment like this I ask — Why bother to take out insurance? R.R. — (Sebastopol).

●●●

TO the gentleman who bought the cake into the Community Youth Support Scheme on Thursday August 18. It was much appreciated. Thank you. — G.H., CYSS (Ballarat).

and enthusiasm shown towards the "boys". A grateful U—14 parent — L.B.— (Ballarat).

●●●

TO the students and staff of Ballarat High School for their production, PARDON ME, IS THIS PLANET TAKEN? It was a pleasure as a parent to see each and every cast member enjoying every minute of yet another excellent production. Keep up the good work B.H.S. — E.H. (Ballarat).

●●●

TO Mrs Isabvel Deaville for her caring attitude and initiative which has now resulted, with the help of others, in the Lisa Manufacturing Company being established in Doveton Street North. R.L. — (Ballarat).

●●●

TO the Citizens' Advice Bureau for well researched advice and for the caring way in which it is presented. C.E. — (Ballarat).

●●●

TO Ron Morrison for going out of his way to give advice. K.J. — (Ballarat).

●●●

TO the service station in Howitt Street for allowing their green and yellow streamers to deface a well kept area of the Shire. B.K. — (Wendouree).

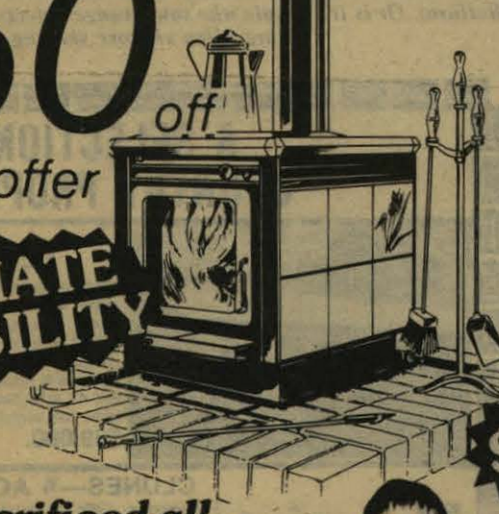
●●●

Beat the
POWER INCREASE

ALL STOCK MUST GO

WE'RE FIRED-UP TO GIVE YOU GREAT WINTER SAVINGS ON FIREPLACES AND HEATERS.

UP TO turbo 70 $150 off
Limited offer



IMMEDIATE AVAILABILITY



Spin-a-fire
Design Selection Award



Turbo Inbuilt
The ideal heater/save space

Save $100



Chalet
Australian Design Award winner

Save $60



"I've sacrificed all demonstration and display stock at never-to-be repeated prices. Hurry for the greatest fireplace deals in town."



Hellmut Schnetker
Founder/Director

BURNING LOG
Burning Log Fireplace Specialists Pty. Ltd.

BRADDA seeks volunteers

Ballarat Regional Alcohol and Drug Dependance Association (BRADDA) is looking for more volunteers.

It needs people who are interested in giving up some time to do some reception work or be available at a drop-in centre, or those who would prefer to become involved as counsellors.

More volunteers are needed to interview people who go to BRADDA for help, answer queries and man the reception area and telephones, give general support and personalised attention to clients, or just be a friend to people extremely lonely as a result of drug and alcohol problems.

All volunteers initially receive 20 hours intensive in-service training over five weeks. This is followed up regularly with fortnightly sessions which alternate between communication and information meetings.

The latter provide the necessary link between volunteers, Jim Burns as co-ordinator, and committee meetings, while the information meetings further develop skills and knowledge about other support groups.

People interested in becoming volunteer helpers may obtain application forms from BRADDA at 1001 Mair Street, but if more information is required they may phone 315 333. Applications close on Tuesday, September 20.

INCOME TAX PROFESSIONALS
● TAX CONSULTANTS
● INSURANCE
● INVESTMENT
ALAN LOCKHART
Ballarat
itp **31 6070**
ITP INCOME TAX PROFESSIONAL
26 LYDIARD ST. SOUTH, BALLARAT.

RELAX IN OUR Beautiful POOL



YMCA passes include use of Health Gym, 25 metre pool, Sauna, Spa, Aerobic classes and discounts on Squash.

The Y.M.C.A. HEALTH STUDIO
OFFERS MORE & OUR PRICES ARE VERY MODEST.

YOU CHOOSE THE LENGTH OF YOUR COURSE

☆ NO CONTRACTS TO SIGN
☆ PAY AS YOU COME OR
☆ PAY MONTHLY WITH
☆ NO INTEREST.
☆ DISCOUNTS for STUDENTS, FAMILIES, UNEMPLOYED.
☆ STOP ANYTIME WITHOUT FINANCIAL PENALTY.

YMCA MORE VARIETY & PROGRAMS THAN ANY OTHER

SUNDAY OBSERVER 29 MAY 83

Eyes on the sky

MARVELLOUS MELBOURNE
by Jim Marett



RAAF vigil for space visitors

WITH the scores of UFO sightings over Melbourne and Bendigo this week there are very few of us who haven't cast an eye towards the sky — hoping for a glimpse of something unearthly.

And many families who braved the chill night air to search the heavens were treated to flashing white lights topped with red and green, racing across the sky.

It has been a field day for UFO fans, bringing the excitement to a fever pitch not seen since the mysterious lights over Bass Straight and the accompanying disappearance of the pilot Valantich.

Sadly, so far, nothing or nobody has landed to greet us.

And as the excitement dies down there's one man in Melbourne whose job it is to bring order and sanity into the sightings.

Flight Lieutenant Brett Biddington is our resident flying saucer expert.

Every UFO sighting reported is investigated by him in his office, surrounded by the files and findings of 20 years of sightings.

Flight Lieutenant Biddington's official title in the RAAF is "Designated Officer Unusual Aerial Sightings (UAS), Operations Branch, Headquarters Support Command, RAAF.

"It's quite a mouthful, and actually the UAS duties only form a part of my overall activities," said Flight Lieutenant Biddington.

Contact

"But it is an important part.

"We have an open mind on the matter of whether or not there are people out there trying to contact us.

"And, if they are, we need to be ready and we need to treat the matter as a security matter because we don't know what to expect.

"Even mankind is trying to make contact with whoever or whatever may be out in space.

"The Mariner Project of the 1970s is a good example.

"This spacecraft contained a plaque engraved with human figures and international communication symbols — in the hope that something out there would see it and understand where we were and who we were.

"If we're doing it, they could be doing it too."

Flight Lieutenant Biddington handles two or three sightings a week on average, but last week was a record with heavy sightings in both Bendigo and Melbourne.

"The majority of sightings are easy to dismiss by a quick check with Melbourne Radar and the Weather Bureau," said Flight Lieutenant Biddington.

"The Melbourne sightings took a little longer but we are confident that they were caused by a combination of planets, stars and weather.

Star

"The major contributor was the star Canopus, a star so bright that the intensity of light can cause dancing of the image and a rainbow effect — causing the so-called colored lights.

"The Bendigo sightings on the other hand are not so easily explained.

"But my report will be released in about a week during which time I will have studied every aspect and drawn some kind of conclusion."

As yet no RAAF report has come out and stated that we've had some kind of visit from another planet.

But we all wait and hope.

Even Flight Lieutenant Biddington.

"I could never be so arrogant as to assume that ours is the only planet in all the universe on which there is life."



Flight Lieutenant Brett Biddington.

THE JOURNAL of the ASTRONOMICAL SOCIETY of VICTORIA

ASTRONOMICAL YEARBOOK

Nº 20 1983

Published by

ASTRONOMICAL SOCIETY OF VICTORIA
Box 1059J GPO Melbourne Victoria Australia 3001

MCMLLXXXII

THE JOURNAL of the ASTRONOMICAL SOCIETY of VICTORIA

ASTRONOMICAL YEARBOOK

No 20 1983

D.F. Marshall Editor..

B.J. Poppleton Director Computing Section.

Published by

ASTRONOMICAL SOCIETY OF VICTORIA
Box 1059J GPO Melbourne Victoria Australia 3001

MCMLXXLXIII

ASTRONOMICAL YEARBOOK

© A.S.V. 1983

ISSN 0067 - 0006

OFFICERS OF THE SOCIETY, 1983

PAST PRESIDENTS

1922 - 1925	C.J. Merfield*	1950	R.G. Gilmour*	1963	W.G.H. Tregear
1926	J.D. Michie*	1951	A.W. Walker	1964 - 1966	F.P. Owen*
1927	P.H. Johnson*	1952	H. Byrt*	1967 - 1968	J.L. Perdix
1928 - 1933	J.A. Moroney*	1953	J.R. Carroll	1969	J.B. Trainor
1934	G.H. Woodhouse*	1953	J.C. Hewitson*	1970	G.A. Duncan*
1935 - 1941	J.A. Moroney*	1954	W.N. Brook*	1971 - 1972	T.B. Tregaskis
1942 - 1944	J.F. Skjellerup*	1955	J.P. Hamilton*	1973 - 1974	A.E. Coombs
1945	J.C. Hewitson*	1956	E.L. James	1975	A.L. LeMarquand
1946	W.N. Brook*	1957	W.G.H. Tregear	1976	T.B. Tregaskis
1947	J.G. Evans*	1958	L.R. Whitby*	1977 - 1978	R.J.C. Lawrence
1948	L.T. Whitney	1959	K.W. Murphy	1979 - 1980	B.S. Adcock
1949	V.W. Stradford*	1960 - 1961	J.L. Perdix	1981 - 1982	D.H. Walker
		1962	L.R. Whitby*		

* Deceased

OFFICE BEARERS

President:	D.H. Walker
Vice Presidents:	B.J. Poppleton
	D.A. Meagher
Secretary:	J. Pollock
Membership Secretary:	P.F. Raw
Treasurer:	K.G. Fowler
Librarian:	N.J. Plever
Curator of the Observatory:	A.L. LeMarquand
Visual Aids Officer:	K. Harrison
Public Relations Officer:	W. Orchison
Immediate Past President:	D.H. Walker

COUNCILLORS

N.L. Jones	K.M. Beard
D.F. Marshall	I.A.B. Sullivan
J. Park	D.A. harding

SECTION DIRECTORS

Astrophotographic:	K. Harrison,"Stellefane" 8 Vermont Avenue,Bundoora 3083
Auroral:	T.B. Tregaskis,21 McGown Rd.,Mount Eliza 3930.Ph. 787 2444
Computing:	B.J. Poppleton, 30 Kent Rd. Surrey Hills 3127. Ph 836 3213
Current Phenomena:	J.B. Trainor, 27 Adler St. Caulfield South 3162 Ph. 523 7779
Demonstrators:	B.S. Adcock, 18 Myddleton Dr. View Bank 3084 Ph. 459 4015
Historical:	W. Orchison, 186 Huntingdale Rd. Mt Waverley 3149.Ph.2772176
Instrument Making:	C.N. Chatfield,32 clifford St. Glen Waverley 3150 Ph.232 9313
Lunar & Planetary:	B.S. Adcock, 18 Myddleton Dr. View Bank 3084 Ph. 459 4015
Radio Astronomy:	M.H. Wilkinson, 72 Raleigh St. Forest Hill 3131 Ph.8783546
Solar:	G. N. Sprot, 80 Melbourne Hill Rd. Warrandyte 3113 Ph 844 2260
Variable Stars:	J.L. Park, 9 Arianne Rd. Glen Waverley 3150 Ph. 232 9881

CALENDAR 1983

	JANUARY	FEBRUARY	MARCH
SUNDAY	30 2 9 16 23	6 13 20 27	6 13 20 27
MONDAY	(31) 3 10 17 24	7 14 21 28	7 (14) 21 28
TUESDAY	4 11 18 25	1 8 15 22	1 8 15 22 29
WEDNESDAY	5 12 19 26	2 9 16 23	2 9 16 23 30
THURSDAY	6 13 20 27	3 10 \17/ 24	3 10 \17/ [24] 31
FRIDAY	7 14 [21] 28	4 11 [18] 25	4 11 18 25
SATURDAY	(1) 8 15 22 29	5 12 19 26	5 12 19 26

	APRIL	MAY	JUNE
SUNDAY	(3) 10 17 24	1 8 15 22 29	5 12 19 26
MONDAY	(4) 11 18 (29)	2 9 16 23 30	6 (13) 20 27
TUESDAY	(5) 12 19 26	3 10 17 24 31	7 14 21 28
WEDNESDAY	6 13 20 27	4 11 18 25	1 8 15 22 29
THURSDAY	7 14 \21/ 28	5 12 \19/ 26	2 9 \16/ 23 30
FRIDAY	(1) 8 15 [22] 29	6 13 [20] 27	3 10 [17] 24
SATURDAY	(2) 9 16 23 30	7 14 21 28	4 11 18 25

	JULY	AUGUST	SEPTEMBER
SUNDAY	31 3 10 17 24	7 14 21 28	4 11 18 25
MONDAY	4 11 18 25	1 8 15 22 29	5 12 19 26
TUESDAY	5 12 19 26	2 9 16 23 30	6 13 20 27
WEDNESDAY	6 13 20 27	3 10 17 24 31	7 14 21 28
THURSDAY	7 14 \21/ 28	4 11 \18/ 25	1 8 \15/ \22/ 29
FRIDAY	1 8 [15] 22 29	5 [12] 19 26	2 [9] 16 23 30
SATURDAY	2 9 16 23 30	6 13 20 27	3 10 17 24

	OCTOBER	NOVEMBER	DECEMBER
SUNDAY	30 2 9 16 23	6 13 20 27	4 11 18 (25)
MONDAY	31 3 10 17 24	7 14 21 28	5 12 19 (26)
TUESDAY	4 11 18 25	(1) 8 15 22 29	6 13 20 (27)
WEDNESDAY	5 12 19 26	2 9 16 23 30	7 14 21 28
THURSDAY	6 13 (20) 27	3 10 \17/ 24	1 [8] 15 22 29
FRIDAY	7 [14] 21 28	4 11 18 25	2 9 16 23 30
SATURDAY	1 8 15 22 29	5 12 [19] 26	3 10 17 24 31

⏢ Annual General Meeting. ⬭ Monthly General Meeting ▽ Annual Social Night. ▭ Members Nights at the Telescopes ◯ Public Holidays. School Holidays Underlined. Field Night November 19.

PREFACE

The format of this Yearbook follows that of previous years very closely. The prime objective has been to ensure members receive adequate advance information of coming astronomical events.

For this, I am greatly indebted to the past Director, Dr C.L. Curnick, for providing much of the numerical information and the salient, and well annotated, computer programs, by which they were derived. At the same time, the Assistant Editor Mr D.F. Marshall, has done a stirling job in typing the whole of the book and collating much of the material. Mr F. Hanneman again undertook the art work and was most ably assisted by Mr F.Pottage. Mr J.B. Trainor checked many of the ephemerides whilst Mr P.f. Raw and Mr A.M. Barrett collated the material needed for grazing occultations and double stars respectively. The interest and support of all members of the Computing Section, particularly Mr D. Gamble in the computer program development, is also gratefully acknowledged.

The data in this Astronomical Yearbook are computed for the Melbourne Observatory, the position of which is:-

Longitude 144 deg 58 min 23.8 sec E -9 hrs 39 min 53.58 sec
Latitude 17 deg 49 min 54.1 sec S

Calculations are based on data and methods outlined in the " Explanatory Supplement to the Astronomical Ephemeris", and in " Astronomical Formulae for Calculators" by Jean Meeus. Dr Y. Kubo of the International Lunar Occultation Centre, Japan, provided the data for the grazing occultations.

B.J. Poppleton
Director,
Computing Section.

TABLE OF CONTENTS

Officers of the Society 3
Calendar, 1983 4
Preface 5
Table of Contents 6
Optical Observatories. 7
Radio Observatories 8
Southern Constellations 9
Northern Constellations 10
The Solar System 11
Ring Systems. 12
Satellite Systems 13
Adjustment for Rise and Set Times 14
Time Reckoning 15
Siderial Time 16
The Sun 17
Ephemeris of the Sun 18
Sunrise and Sunset Times. 19
Eclipses 21
Phases and Distances of the Moon 22
Moonrise and Moonset Times 23
The Sun's Selenographic Colongatude 25
The Ephemeris of the Moon 26
The Appearance of the Planets 29
The Planetgraph. 30
Use of Planetgraph and Tables 32
Lunar Occultation Tables. 33
Grazing Occultations 35
Occultation Maps 36
Ephemeris of Mercury 38
Ephemeris of Venus 40
Ephemeris of Mars 41
Ephemeris of Jupiter 43
Satellites of Jupiter. 46
Ephemeris of Saturn 50
Positions of Uranus Neptune Pluto. 51
Planetary Position Charts 52
Precession 54
Astrophysical Details. 55
Double Stars. 56
Diary 58
Notes 60

POSITIONS OF AUSTRALIAN OPTICAL OBSERVATORIES

Location	Observatory	Alt	Longitude	Latitude	Longitude
		m	h m s	° ′ ″	° ′ ″
Adelaide S.A.	University of Adelaide Observatory	41	- 9 14 19.85	-34 55 38	-138 34 57.75
Albury N.S.W.	Astronomical Society of Albury-Wodonga		- 9 47 40	-36 05	-146 55
Bacchus Marsh Vic.	Rock-Top Observatory (R.& M.Wilkinson)	280	- 9 37 32	-37 40 30	-144 23
Ballarat Vic.	Oddie-baker Obs. (Ballarat Astro. Soc.)	460	- 9 35 28	-37 34	-143 52
Bardon Qld.	Bardon Observatory (W.G. Best)	91	-10 11 33.69	-27 55	-152 53 25.4
Bickley W.A.	Government Observatory	391	- 7 44 32.14	-32 00 32.2	-116 08 06 2
Cootamundra N.S.W.	Mount Coughlan Observatory (R.T. Price)		- 9 52	-34 39	-148 00
Culgoora N.S.W.	C.S.I.R.O. Solar Observatory	215	- 9 58 14.63	-30 18 55.74	-149 33 39.5
Elaine Vic.	Elaine Observatory (G.J. Bye)	540	- 9 36 04	-37 47	-144 01
Frankston Vic.	Astronomical Society of Frankston Obs	In process of relocation.			
Geelong Vic.	Astronomical Society of Geelong Obs.	6	- 9 37 24.89	-38 10 53.3	-144 21 13.3
Gilgandra N.S.W.	Gilgandra Observatory (J.L. Estens)		- 9 54 38	-31 42	-148 39 30
Heathpool S.A.	Astro.Soc., South Australia Observatory	83	- 9 14 34.58	-34 55 55.27	-138 38 38.75
Hopelands Qld.	Hopelands Observatory (H.C.T. Powell)	326	-10 02 34.55	-26 53 21.5	-150 38 38.2
Kalamunda W.A.	Astro. Soc. West Australia Observatory		- 7 44 32	-31 59	-116 08
Kallangur Qld.	Midway Observatory (H.D. Kennedy)	25	-10 12 00.98	-27 14 55.6	-153 00 14.7
Kambah A.C.T.	Herald Observatory (D. Herald)	582	- 9 56 14.97	-35 23 55.00	-149 03 44.53
Lane Cove N.S.W.	Riverview College Observatory	26	-10 04 37.99	-33 49 45.7	-151 09 29.9
Lavington N.S.W.	Lavington Observatory (H. Akkermann)	189	- 9 47 44.15	-36 02 37.31	-146 56 02.21
Macleod Vic.	H.E. Pottage Observatory(65 Erskine Rd)	61	- 9 40 17.15	-37 43 49.2	-145 04 17.3
Melbourne Vic.	Old Melbourne Obs. (Astro. Soc. Vic.)	28	- 9 39 53.58	-37 49 54.1	-144 58 23.8
Mount Bowen N.S.W.	Mount Bowen Observatory (Astro. Soc. N.S.W.)	463	-10 02 26.7	-33 34 40	-150 36 40
Mount Burnett Vic.	Monash University Observatory	311	- 9 41 58.58	-37 58 37.39	-145 29 38.62
Mount Coot-tha Qld.	Sir Thomas Brisbane Obs.(J.W. Ryder)	39	-10 11 54.31	-27 28 36.5	-152 58 34.7
Mount Eliza Vic.	McGown Observatory (T.B. Tregaskis)	110	- 9 40 28	-38 11	-145 07
Mount Stromlo A.C.T.	Australian National University Observatory	768	- 9 56 01.35	-35 19 16	-149 00 20
Mt. Tamborine Qld.	Mount Tamborine Observatory (A.A. Page)	550	-10 12 51.18	-27 58 20.62	-153 12 47.69
Newcastle N.S.W.	*Astronomical Society of the Hunter		-10 06 52	-32 56	-151 43
Point Cook Vic.	RAAF Academy - University of Melbourne Obs.	21	- 9 39 00.53	-37 56 02	-144 45 08
Sandy Bay Tas.	Solar Observatory (C. Bisdee)	98	- 9 49 17.2	-42 56 50	-147 18

POSITIONS OF AUSTRALIAN OPTICAL OBSERVATORIES (CONTINUED)

Location	Observatory	Alt	Longitude			Latitude			Longitude		
		m	h	m	s	°	'	"	°	'	"
Sandy Bay Tas.	University of Tasmania Observatory	350	- 9	49	12	-42	53		-137	18	
Siding Spring N.S.W.	Siding Spring Observatory	1165	- 9	56	15.86	-31	16	37.34	-149	03	57.9
Springwood Qld.	Springwood Observatory (G.D. Thompson)	85	-10	12	32.25	-27	37	07.3	-153	08	03.8
Sutherland N.S.W.	Green Point Obs. (Sutherland Astro. Soc.)	54	-10	04	17.2	-34	00	13	-151	04	18
Sydney N.S.W.	Government Observatory	44	-10	04	49.19	-33	51	41.1	-151	12	17.9
Townsville Qld.	MacDonald Observatory (A.G. MacDonald)	10	- 9	47	12.7	-19	15	12	-146	48	10
View Bank Vic.	Adcock Observatory (B.S. Adcock)		- 9	40	18	-37	44	30	-145	04	30
Warwick Qld.	East Warwick Observatory (J. Henley)	406	-10	08	10.3	-28	13	07	-152	02	34
Yallourn Vic.	Latrobe Valley Astronomical Society Obs.	183	- 9	45	17.2	-38	11		-146	19	18

*This Society does not use a permanent observatory; the position is that of an arbitary City location

POSITIONS OF AUSTRALIAN RADIO OBSERVATORIES

Location	Observatory	Alt	Longitude			Latitude			Longitude		
		m	h	m	s	°	'	"	°	'	"
Ballarat Vic.	W.E. Ross Radio Obs. (Ballarat Astro. Soc.)	460	- 9	35	28	-37	34		-143	52	
Birchip Vic.	Birchip Radio Observatory (r. Naughton)	100	- 9	31	38	-35	59		-142	54	30
Culgoora N.S.W.	C.S.I.R.O. Solar Observatory	215	- 9	58	14.63	-30	18	55.74	-149	33	39.5
Epping N.S.W.	C.S.I.R.O. Division of Radiophysics	100	-10	04	24.28	-33	46	18.21	-151	06	04.2
Hoskingtown N.S.W.	Molonglo Radio Obs. (University of Sydney)	732	- 9	57	41.68	-35	22	18.84	-149	25	25.2
Kemps Creek N.S.W.	Fleurs Radio Obs.(University of Sydney)	45	-10	03	06	-33	51	45	-150	46	30
Learmonth W.A.	Learmonth Solar Observatory (I. P. S.)		- 7	36	23	-22	30		-114	06	
Mount Gungin W.A.	Mt Gungin Radio Obs. (Astronaut. Soc W.A.)	356	- 7	44	30.72	-31	59	54.6	-116	07	40.8
Parkes N.S.W.	Aust. National Radio Astro. Obs. (C.S.I.R.O.)	392	- 9	53	02.94	-33	00	00.04	-148	15	44.1
Sandy Bay Tas.	University of Tasmania Radio Astronomy Obs.	S/L	- 9	49	12	-42	53		-147	18	

List of Constellations

CONSTELLATIONS *SOUTH* OF THE ZODIAC

Abbreviation	Latin Nominative	English Translation
Ant	Antlia	The Pneumatic Pump
Aps	Apus	The Bird of Paradise
Ara	Ara	The Altar
Cae	Caelum	The Graving Tool
CMa	Canis Major	The Great Dog
CMi	Canis Minor	The Little Dog
Car	Carina	*The Keel (of the ship)
Cen	Centaurus	The Centaur
Cet	Cetus	The Whale
Cha	Chamaeleon	The Chameleon
Cir	Circinus	The Pair of Compasses
Col	Columba	The Dove
CrA	Corona Australis	The Southern Crown
Crv	Corvus	The Crow
Crt	Crater	The Goblet
Cru	Crux	The Southern Cross
Dor	Dorado	The Swordfish
Eri	Eridanus	The River Eridanus
For	Fornax	The Furnace
Gru	Grus	The Crane
Hor	Horologium	The Clock
Hya	Hydra	The Sea-Serpent
Hyi	Hydrus	The Water-Snake
Ind	Indus	The Indian Bird
Lep	Lepus	The Hare
Lup	Lupus	The Wolf
Men	Mensa	The Table
Mic	Microscopium	The Microscope
Mon	Monocerus	The Unicorn
Mus	Musca	The Fly
Nor	Norma	The Ruler
Oct	Octans	The Octant
Ori	Orion	Orion
Pav	Pavo	The Peacock
Phe	Phoenix	The Phoenix
Pic	Pictor	The Easel
PsA	Piscis Austrinus	The Southern Fish
Pup	Puppis	*The Prow (of the ship)
Pyx	Pyxis	*The Mariner's Compass
Ret	Reticulum	The Net
Scl	Sculptor	The Sculptor
Sex	Sextans	The Sextant
Tel	Telescopium	The Telescope
TrA	Triangulum Australe	The Southern Triangle
Tuc	Tucana	The Toucan
Vel	Vela	*The Sails (of the ship)
Vol	Volans	The Flying Fish

*These constellations form the ancient constellation Argo Navis, the Argonaut's ship

THE CONSTELLATIONS OF THE *ZODIAC*

Abbreviation	Latin Nominative	English Translation
Ari	Aires	The Ram
Tau	Taurus	The Bull
Gem	Gemini	The Twins
Cnc	Cancer	The Crab
Leo	Leo	The Lion
Vir	Virgo	The Virgin
Lib	Libra	The Scales
Sco	Scorpius	The Scorpian
Sgr	Sagittarius	The Archer
Cap	Capricornus	The Goat
Aqr	Aquarius	The Water Carrier
Psc	Pisces	The Fishes

CONSTELLATIONS *NORTH* OF THE ZODIAC

Abbreviation	Latin Nominative	English Translation
And	Andromeda	Andromeda
Aql	Aquila	The Eagle
Aur	Auriga	The Charioteer
Boo	Bootes	The Herdsman
Cam	Camelopardalis	The Giraffe
CVn	Canes Venatici	The Hunting Dogs
Cas	Cassiopeia	Cassiopeia
Cep	Cepheus	Cepheus
Com	Coma Berenices	Berenice's Hair
CrB	Corona Borealis	The Northern Crown
Cyg	Cygnus	The Swan
Del	Delphinus	The Dolphin
Dra	Draco	The Dragon
Equ	Equuleus	The Little Horse
Her	Hercules	Hercules
Lac	Lacerta	The Lizard
LMi	Leo Minor	The Little Lion
Lyn	Lynx	The Lynx
Lyr	Lyra	The Lyre
Oph	Ophiuchus	The Serpent Bearer
Peg	Pegasus	Pegasus
Per	Perseus	Perseus
Sge	Sagitta	The Arrow
Sct	Scutum	Sobieski's Shield
Ser	Serpens	The Serpent
Tri	Triangulum	The Triangle
UMa	Ursa Major	The Great Bear
UMi	Ursa Minor	The Little Bear
Vul	Vulpecula	The Fox

THE SOLAR SYSTEM

Note: All values in brackets may be in error by more than 10%

THE SUN

Diameter (10^3 km)	Mass (kg)	Parrallax (sec)	Temperature ($^\circ$K) Corona	Surface	Core	Siderial Rotation - Days Equator	40° Lat	Poles
1,391	2×10^{30}	8·7943	$1 \sim 2 \times 10^6$	6,500	~20,000	25·3	27·5	>29

THE PLANETS - MEAN ORBITAL DATA

Planet	Mean Orbital Radius (10^6 km)	(AU)	Orbital Period Siderial	Synodic	Mean Orbit Velocity	Eccentricity	Inclination to Ecliptic
MERCURY	57·9	0·3871	87·97d	115·88	47·89 km/s	0·2056	7·00
VENUS	108·2	0·7233	224·70d	583·92	35·03 "	0·0068	3·39
EARTH	149·6	1·0000	365·26d		29·79 "	0·0167	
MARS	227·9	1·5237	686·98d	779·94	24·13 "	0·0934	1·85
JUPITER	778·3	5·2028	11·86y	398·88	13·06 "	0·0485	1·30
SATURN	1,427·0	9·5388	29·46y	378·09	9·64 "	0·0556	2·49
URANUS	2,869·6	19·1819	84·01y	369·66	6·81 "	0·0472	0·77
NEPTUNE	4,496·6	30·0578	164·79y	367·49	5·43 "	0·0086	1·77
PLUTO	5,900·0	39·44	247·7y	366·73	4·74 "	0·250	17·2

PHYSICAL DATA FOR THE PLANETS (⊕ = VALUE FOR THE EARTH) (* = RETROGRADE ROTATION)

Planet	Mass (kg)	Equatorial Radius ⊕ = 1	(km)	Ellipticity	Surface Gravity (m/s^2)
MERCURY	$3·303 \times 10^{23}$	0·382	2,439	0·0	3·78
VENUS	$4·870 \times 10^{24}$	0·949	6,050	0·0	8·60
EARTH	$5·976 \times 10^{24}$	1·000	6,378	0·0034	9·78
MARS	$6·421 \times 10^{23}$	0·532	3,398	0·0059	3·72
JUPITER	$1·899 \times 10^{27}$	11·27	71,900	0·0637	22·88
SATURN	$5·686 \times 10^{26}$	9·44	60,000	0·102	9·05
URANUS	$8·66 \times 10^{25}$	4·10	26,145	(0·024)	7·77
NEPTUNE	$1·030 \times 10^{26}$	3·88	24,750	0·0266	11·00
PLUTO	$(6·6 \times 10^{21} - 1·6 \times 10^{22})$	(0·12 - 0·30)	(1,200 - 1,900)	?	(4·3)

Planet	Mean Density ($g.cm^3$)	Escape Velocity (km/s)	Siderial Rotation Period	Equator Inclined to Orbit
MERCURY	5·42	4·3	58·65d	0·0 deg
VENUS	5·25	10·3	243·01d*	-2·0 "
EARTH	5·52	11·2	23·93h	23·45 "
MARS	3·94	5·0	24·62h	23·98 "
JUPITER	1·314	59·5	9·84h	3·08 "
SATURN	0·69	35·6	10·23h	29·0 "
URANUS	(1·19)	21·2	15·5h	97·92 "
NEPTUNE	1·66	23·6	15·8h	28·8 "
PLUTO	(0·6 - 1·7)	(5·3)	6·39d	(>50) "

THE RING SYSTEMS

JUPITER - PLANETARY RADIUS = 71,000 km.

Ring	Secondary Ring 1	Primary Ring	Secondary Ring 2
Radius (km)	(71,900) to 123,700	123,700 to 130,100	251,700 to (359,000)

SATURN - PLANETARY RADIUS = 60,000 km.

Ring	Radius (10^3 km)	Ring	Radius (10^3 km)
D ring, inner edge	(60)	A ring, inner edge	120·6
D ring, outer edge	(72·6)	Encke Division	132·6
Guerin Division, width	(1·2)	A ring, outer edge	136·2
C ring, inner edge	73·8	F ring, average	141·0
C ring, outer edge	91·8	G ring, average	150·0
B ring, inner edge	91·8	E ring, inner edge	(240)
B ring, outer edge	115·8	E ring, outer edge	(480)
Cassini Division, width	4·8		

URANUS - PLANETARY RADIUS = 26,145 km.

Ring	6	5	4	α	β	η	γ	δ	ε
Radius (10^3 km)	41·9	42·3	42·6	44·8	45·7	47·2	47·7	48·3	51·2

THE SATELLITE SYSTEMS

SATELLITES OF MARS

	Size (km)	Mass (10^{15} kg)	Orbit Eccentricity	Mean Orbit Radius	Siderial Period (days)	Inclination of Orbit (deg)	Mean Density (g/cm^3)
Phobos	19·2 x 21·4 x 27·0	9·6	0·018	9,380 km	0·31891	1·0	1·9
Demios	11 x 12 x 15	2·0	0·002	23,500 km	1·26244	2·0	2·1

SATELLITES OF SATURN

	Radius (km)	Mass (kg)	Mean Orbit Radius	Siderial Period (days)	Orbital Inclination	Orbit Eccentricity	Mean Density (g/cm^3)
Mimas	195	$3·76 \times 10^{19}$	185,000 km	0·942	1·517 deg	0·020	1·2
Enceladus	250	$(7·40 \times 10^{19})$	238,000 "	1·370	0·023 "	0·004	(1·1)
Tethys	525	$6·26 \times 10^{20}$	295,000 "	1·888	1·093 "	0·000	(1·0)
Dione	560	$1·05 \times 10^{21}$	377,000 "	2·737	0·023 "	0·002	1·4
Rhea	765	$(2·28 \times 10^{21})$	527,000 "	4·518	0·35 "	0·001	1·3
Titan	2,560	$1·36 \times 10^{23})$	1,222,000 "	15·945	0·33 "	0·029	1·9
Hyperion	(145)	$(1·10 \times 10^{20})$	1,481,000 "	21·277	0·4 "	0·104	?
Iapetus	720	$(1·93 \times 10^{21})$	3,560,000 "	79·331	14·7 "	0·028	(1·2)
Phoebe	(70)	?	12,930,000 "	550·4	150 "	0·163	?

THE SATELLITE SYSTEMS (CONT)

SATELLITES OF JUPITER

	Radius (km)	Mass (kg)	Mean Orbit Radius	Siderial Period (days)	Orbital Inclination	Orbit Eccentricity	Mean Density (g/cm^3)
Amalthea	120	?	181,300 km	0·489	0·455 deg	0·003	?
Io	1,816	$8·916 \times 10^{22}$	412,600 "	1·769	0·027 "	0·000	3·55
Europa	1,563	$4·873 \times 10^{22}$	670,900 "	3·551	0·468 "	0·000	3·04
Ganymede	2,638	$1·490 \times 10^{23}$	1,070,000 "	7·155	0·183 "	0·001	1·93
Callisto	2,410	$1·064 \times 10^{23}$	1,880,000 "	16·689	0·253 "	0·007	1·81
Leda	1·7	?	11,110,000 "	240	27 "	0·147	?
Himalia	85	?	11,470,000 "	250·6	28 "	0·158	?
Lysithea	3·2	?	11,710,000 "	260	29 "	0·12	?
Elara	40	?	11,740,000 "	260·1	26 "	0·207	?
Ananke	3·1	?	20,700,000 "	617	147 "	0·169	?
Carme	4·2	?	22,350,000 "	692	163 "	0·207	?
Pasiphae	4·2	?	23,300,000 "	735	147 "	0·40	?
Sinope	3·2	?	23,700,000 "	758	156 "	0·275	?

SATELLITES OF URANUS

	Radius (km)	Mass (kg)	Mean Orbit Radius	Siderial Period (days)	Orbital Inclination	Orbit Eccentricity	Mean Density (g/cm^3)
Miranda	160	$(3·4 \times 10^{19})$	130,000 km	1·414	0 deg	0·000	(2·0)
Ariel	430	$(6·7 \times 10^{20})$	192,000 "	2·520	0 "	0·003	(2·0)
Umbriel	450	$(7·6 \times 10^{20})$	267,000 "	4·144	0 "	0·004	(2·0)
Titania	520	$(1·2 \times 10^{21})$	438,000 "	8·706	0 "	0·002	(2·0)
Oberon	460	$(8·2 \times 10^{21})$	586,000 "	13·463	0 "	0·001	(2·0)

SATELLITES OF NEPTUNE

	Radius (km)	Mass (kg)	Mean Orbit Radius	Siderial Period (days)	Orbital Inclination	Orbit Eccentricity	Mean Density (g/cm^3)
Triton	(1,900)	$5·7 \times 10^{22}$	355,000 km	5·877	160 deg	0·00	(2·0)
Nereid	470	$1·3 \times 10^{15}$	5,562,000 "	359·88	28 "	0·75	(2·6)

THE SATELLITE OF EARTH - THE MOON

Radius (km)	Mass (kg)	Mean Orbit Radius	Siderial Period (days)	Synodic Period (days)	Orbital Inclination	Mean Density (g/cm^3)
1,738	$7·35 \times 10^{22}$	384,400 km	27·322	29·531	6·68 deg	3·34

Adjustment of Rise and Set Times

Rising and setting times given in this Yearbook have been computed for Melbourne. To obtain the times for another place, corrections must be made for the difference in longitude and latitude from Melbourne. For places *east* of Melbourne, *subtract* 4 minutes per degree difference in longitude; for places *west*, *add* 4 minutes per degree. These corrections are given in the table below for some selected locations.

The corrections for latitude difference also depend on the declination of the object in question. The table on page 14 gives this correction for various latitudes and declinations. The values are *added* to the times of *rising*; for times of *setting*, the sign of the correction must be *reversed*.

EXAMPLE : Find the times of rise and set of the Sun on April 16 at Albury (36.1 deg. S 146.9 deg.E)

Declination of the Sun on April 16 is +9 deg. 51 min. (EPHEMERIS OF THE SUN TABLE)

	RISE	SET
Times for Melbourne	06h 47m	17h 53m
Correction for longitude	-00h 08m	-00h 08m
Correction for latitude (Lat -36 ,dec. +10. Look under Sunries and Sunset tables)	-00h 02m	+00h 02m
Times at Albury	06h 37m	17h 47m

LONGITUDE CORRECTION FOR RISE AND SET TIMES

Location	Latitude	Longitude	Long. Dif.	Correction
	o '	o '	o '	m
Melbourne	-37 50	-144 58		
Adelaide	-34 56	-138 39	+06 19	+ 25
Albury	-36 05	-146 55	-01 57	- 08
Ballarat	-37 34	-143 52	+01 06	+ 04
Bendigo	-36 46	-144 17	+00 41	+ 03
Broken Hill	-31 58	-141 27	+03 31	+ 14
Canberra	-35 18	-149 08	-04 10	- 17
Frankston	-38 09	-145 08	-00 10	- 01
Geelong	-38 11	-144 21	+00 37	+ 02
Gilgandra	-31 42	-148 39	-03 41	- 15
Hamilton	-37 45	-142 02	+02 56	+ 12
Hobart	-42 52	-147 20	-02 22	- 09
Horsham	-36 43	-142 12	+02 46	+ 11
Mildura	-34 11	-142 09	+02 49	+ 11
Newcastle	-32 56	-151 43	-06 45	- 27
Perth	-32 00	-115 52	+29 06	+116
Sydney	-33 52	-151 12	-06 14	- 25
Yallourn	-38 11	-146 19	-01 21	- 05

Time Reckoning

UNIVERSAL TIME (UT), formerly Greenwich Mean Time, is the mean solar time on the Greenwich meridian (longitude = 0°), and is reckoned on a 24h clock with 0h at Greenwich midnight. Some tables in this Yearbook give information for 0h UT.

AUSTRALIAN EASTERN STANDARD TIME (AEST) is the local time corresponding to longitude 150° E of Greenwich, and is 10h in advance of Universal Time; thus,

AEST = UT + 10h

AEST is used in the Eastern States - Queensland, New South Wales, Victoria and Tasmania. It is the time used in this Yearbook, unless otherwise stated.

AUSTRALIAN CENTRAL STANDARD TIME is used in South Australia and the Northern Territory. It is 9h 30m in advance of Universal Time, and 30m behind AEST.

SUMMER TIME or daylight-saving time is observed in some states, usually from the last Sunday in October until the first Sunday in March. During this period clocks are advanced by one hour on Standard Time. No allowance is made in this Yearbook for Summer Time.

JULIAN DATE (JD); Julian Days count the number of days elapsed since the arbitrarily chosen zero date of 4713 BC January 1st. They are taken to begin at Greenwich noon,

which is 22h AEST. Thus, 1983 January 6d 22h AEST is the beginning of JD 2 445 341. P arts of a day are expressed as decimals of a Julian Day, e.g. 1983 January 6d 28h AEST = Jd 2 444 976.042

SIDEREAL TIME may be considered as a measure of Earth's angular orientation in space. Local sidereal time (LST) at any instant is equal to the celestial coordinate Right Ascension which is crossing the observer's meridian at that instant. Since one mean solar day is equal to 24h 02m 56.6s of sidereal time, at a fixed time of the day the value of overhead Right Ascension will be 3h 56.6s greater each succeeding day.

The table on the opposite page gives local sideral time at 22h AEST for Melbourne, at intervals of 5 days. The small table at the foot of that page will enable observers to obtain LST at 22h on dates between those tabulated. To obtain LST at a time other than 22h AEST, remember that one hour of mean solar time equals 1h 00m 09.9s of sidereal time.

The local sidereal time at 22h for another place, may be had by adding 4 minutes to the tabulated values for every degree that place is east of Melbourne, or by subtracting 4 minutes for every degree west of Melbourne.

EXAMPLE : Find the local siderereal time at Yallourn on Jan. 24d 23h 20m AEST.

LST Melbourne at January 21d 22h		5h 41m 03s
Correction for longitude (-1 deg 21 min)	+	5 24
LST Yallourn at January 21d 22h		5h 44m 27s
Correction for 3 days		11 50
Correction for 1 hour		1 00 10
Correction for 20 minutes		20 03
LST Yallourn at January 24d 23h20m		7h 16m 30s

SIDEREAL TIME

Date	Julian Day Beginning at 22h	Sidereal Time Melbourne 22h	Date	Julian Day Beginning at 22h	Sidereal Time Melbourne 22h
	d	h m s		d	h m s
Jan -4	2 445 331	4 02 29	Jun 30	2 445 516	16 11 52
1	336	4 22 12			
6	341	4 41 55	Jul 5	521	16 31 35
11	346	5 01 53	10	526	16 51 18
16	351	5 31 20	15	531	17 11 00
21	356	5 41 03	20	536	17 30 43
26	361	6 00 46	25	541	17 50 26
31	366	6 20 29	30	546	18 10 09
Feb 5	371	6 40 12	Aug 4	551	18 29 51
10	376	6 59 54	9	556	18 49 34
15	381	7 19 37	14	561	19 09 17
20	386	7 39 20	19	566	19 29 00
25	391	7 59 03	24	571	19 48 43
			29	576	20 08 25
Mar 2	396	8 18 45			
7	401	8 38 28	Sep 3	581	20 28 08
12	406	8 58 11	8	586	20 47 51
17	411	9 17 54	13	591	21 07 34
22	416	9 37 37	18	596	21 27 16
27	421	9 57 19	23	601	21 46 59
			28	606	22 06 42
Apr 1	426	10 17 02			
6	431	10 36 45	Oct 3	611	22 26 25
11	436	10 56 28	8	616	22 46 08
16	441	11 16 10	13	621	23 05 50
21	446	11 35 53	18	626	23 25 33
26	451	11 55 36	23	631	23 45 16
			28	636	00 04 52
May 1	456	12 15 19			
6	461	12 35 02	Nov 2	641	00 24 41
11	466	12 54 44	7	646	00 44 24
16	471	13 14 27	12	651	01 04 07
21	476	13 34 10	17	656	01 23 50
26	481	13 53 53	22	661	01 43 33
31	486	14 13 35	27	666	02 03 15
Jun 5	491	14 33 18	Dec 2	671	02 22 58
10	496	14 53 01	7	676	02 42 41
15	501	15 12 44	12	681	03 02 24
20	506	15 32 26	17	686	03 22 06
25	511	15 52 09	22	691	03 41 49
30	516	16 11 52	27	696	04 01 32
			32	701	04 21 15

MULTIPLES OF 3m 56s.6

1	2	3	4	5
3m 57s	7m 53s	11m 50s	15m 46s	15m 43s

THE SUN

The ephemeris on the opposite page gives the equatorial co-ordinates of the centre of the Sun at 0h UT (i.e. 10h AEST) at intervals of te ays.

The Equation of Time is defined as local apparent time minus local mean time. On the Australian Eastern standard meridian (longitude -150°), local mean time corresponds to AEST. The Sun's passage over the standard meridian (apparent noon) occurs at 12h AEST minus the Equation of Time. The Sun's meridian passage at other longitudes occurs four minutes *later* per degree *west* of the standard meridian, or four minutes *earlier* per degree *east*. At Melbourne, which is slightly in excess of 5° *west* of the 150° standard meridian, the Sun's meridian passage (local apparent noon) takes place at 12h 20m·1 AEST, minus the Equation of Time. For example, on January 21st., the Sun crosses the meridian of Melbourne at 12h 20m·1 - (-11m 2) = 12h 31m·3 AEST.

The last columns give information on the orientation of the Sun relative to the Earth, at 0h UT on the given dates. P is the position angle of the north end of the Sun's axis of rotation, measured eastwards from the north point of the Sun's disc. B is the heliographic latitude of the centre of the disc; when positive, the north pole of the Sun is tilted towards the Earth. L is the heliographic longitude of the centre of the disc. The heliographic longitude increases from 0° to 360° in the direction of rotation of the Sun, i.e. westwards, as seen from Earth. The value of L *decreases* with time, at a rate of about 13°·2 per day, or 0°.55 per hour.

EXAMPLE : What is the value of L on April 20d 16h AEST?

On April 16d10h AEST (= 11d 00h UT)	L = 25.4 deg
Correction for 4 days (4 x 13.2 deg)	52.8
Correction for 6 hours (6 x 0.55 deg)	3.3
On April 20d 16h AEST	L = 81.5 deg

The values of L given in the table are based on Carrington's Series of Rotations with a sidereal rotation period of 25d·38, and are used mainly for statistical purposes. In fact, the Sun does not rotate as a solid body - the sidereal period at the equator is 25d·03, increases to 26d·39 at latitude 30°, and is about 30d near the poles.

SYNODIC ROTATION NUMBERS

Rotation No.	Date of Commencement	Rotation No.	Date of Commencement
1731	1983 Jan 9.19 (UT)	1738	1983 Jul 19.95 (UT)
1732	Feb 5.51	1739	Aug 17.17
1733	Mar 4.82	1740	Sep 13.44
1734	Apr 1.09	1741	Oct 10.74
1735	Apr 28.34	1742	Nov 7.07
1736	May 25.53	1743	Dec 4.40
1737	Jun 22.75	1744	Dec 31.74

The synodic rotations are numbered in continuation of Carrington's Greenwich Photoheliographic series (R.C. Carrington, *Observations of the Spots on the Sun* 1853) of which No. 1 commenced on November 9th., 1853.

EPHEREMIS OF SUN (at 0h UT)

Date	RA	Dec	Equation of Time	Diam	Dist	P	B	L	Long
	h m	° '	m	' "	AU	°	°	°	°
Dec 17	17 37.0	-23 20	4.2	32 34	0.984	9.4	-1.2	76.9	264.72
27	18 21.4	-23.21	-0.8	32 35	0.983	4.7	-2.4	305.2	274.91
Jan 6	19 05.5	-22 35	-5.5	32 35	0.983	-0.1	-3.6	173.5	285.10
16	19 49.0	-21.05	-9.5	32 34	0.984	-4.9	-4.6	41.8	295.29
26	20 31.3	-18 54	-12.4	32 33	0.985	-9.4	-5.5	270.1	305.46
Feb 5	21 12.3	-16 09	-14.0	32 30	0.986	-13.6	-6.3	138.5	315.62
15	21 52.0	-12 56	-14.2	32 26	0.988	-17.3	-6.8	6.8	325.74
25	22 30.4	-9 23	-13.3	32 22	0.990	-20.4	-7.1	235.1	335.82
Mar 7	23 07.9	-5 35	-11.3	32 17	0.992	-22.8	-7.2	103.4	345.86
17	23 44.7	-1 39	-8.7	32 12	0.995	-24.7	-7.1	331.6	355.84
27	0 21.2	2.17	-5.7	32 07	0.998	-25.9	-6.8	199.8	5.77
Apr 6	0 57.6	6 09	-2.7	32 01	1.001	-26.3	-6.3	67.8	15.64
16	1 34.4	9 51	-0.1	31 56	1.003	-26.0	-5.6	295.8	25.45
26	2 11.7	13 16	2.0	31 51	1.006	-25.0	-4.7	163.7	35.22
May 6	2 49.8	16 19	3.3	31 46	1.009	-23.3	-3.7	31.6	44.92
16	3 28.9	18 55	3.7	31 41	1.011	-20.9	-2.6	259.4	54.59
26	4 08.9	20 59	3.1	31 38	1.013	-17.8	-1.4	127.1	64.21
Jun 5	4 49.7	22 28	1.7	31 35	1.015	-14.1	-0.2	354.7	73.80
15	5 31.1	23 16	-0.2	31 33	1.016	-10.1	1.0	222.4	83.36
25	6 12.7	23 25	-2.4	31 31	1.016	-5.7	2.2	90.0	92.91
Jul 5	6 54.1	22 52	-4.4	31 31	1.017	-1.1	3.3	317.7	102.44
15	7 35.0	21 39	-5.8	31 31	1.016	3.4	4.3	185.3	111.98
25	8 15.0	19 49	-6.5	31 33	1.016	7.7	5.2	53.0	121.52
Aug 4	8 54.1	17 27	-6.2	31 35	1.015	11.8	6.0	280.7	131.08
14	9 32.3	14 36	-4.8	31 38	1.013	15.5	6.6	148.5	140.67
24	10 09.5	11 22	-2.6	31 41	1.011	18.7	7.0	16.4	150.29
Sep 3	10 45.9	7 50	0.3	31 46	1.009	21.5	7.2	244.2	159.95
13	11 22.0	4 06	3.7	31 50	1.006	23.6	7.2	112.2	169.66
23	11 57.9	0 14	7.3	31 56	1.004	25.2	7.0	340.2	179.42
Oct 3	12 33.9	-3 39	10.6	32 01	1.001	26.1	6.6	208.2	189.23
13	13 10.5	-7.29	13.5	32 07	0.998	26.3	6.0	76.3	199.10
23	13 47.9	-11 08	15.5	32 12	0.995	25.8	5.3	304.4	209.02
Nov 2	14 26.5	-14 30	16.4	32 17	0.992	24.5	4.3	172.5	219.00
12	15 06.3	-17 29	15.9	32 22	0.990	22.4	3.2	40.6	229.04
22	15 47.6	-19 58	14.1	32 26	0.988	19.5	2.0	268.8	239.12
Dec 2	16 30.2	-21 50	10.9	32 30	0.986	15.9	0.8	137.0	249.24
12	17 13.8	-23 01	6.7	32 32	0.985	11.8	-0.5	5.3	259.39
22	17 58.1	-23 26	1.9	32 34	0.984	7.2	-1.8	233.5	269.56
Jan 1	18 42.4	-23 05	-3.1	32 35	0.983	2.4	-3.0	101.8	279.75
11	19 26.3	-21 58	-7.5	32 35	0.983	-2.4	-4.1	330.1	289.95
21	20 09.3	-20 07	-11.0	32 34	0.984	-7.1	-5.1	198.4	300.13
31	20 51.0	-17 40	-13.3	32 31	0.985	-11.5	-5.9	66.7	310.30

The meridian passage of the Sun atMelbourne is equal to 12h 20s.1 (AEST) minus the Equation of Time.

SUNRISE AND SUNSET AT MELBOURNE (JANUARY TO JUNE)

	January		February		March		April		May		June	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
d	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	d
1	5 01	19 45	5 33	19 34	6 04	19 01	6 33	18 15	7 00	17 34	7 26	17 09	1
2	5 02	19 46	5 34	19 33	6 05	19 00	6 34	18 13	7 01	17 33	7 26	17 09	2
3	5 03	19 46	5 35	19 32	6 06	18 58	6 35	18 12	7 02	17 32	7 27	17 09	3
4	5 03	19 46	5 36	19 31	6 07	18 57	6 36	18 10	7 03	17 31	7 28	17 09	4
5	5 04	19 46	5 37	19 30	6 08	18 55	6 37	18 09	7 04	17 29	7 28	17 08	5
6	5 05	19 46	5 39	19 29	6 09	18 54	6 38	18 07	7 05	17 28	7 29	17 08	6
7	5 06	19 46	5 40	19 28	6 10	18 53	6 39	18 06	7 06	17 27	7 30	17 08	7
8	5 07	19 46	5 41	19 27	6 11	18 51	6 40	18 04	7 07	17 26	7 30	17 08	8
9	5 08	19 46	5 42	19 26	6 12	18 50	6 40	18 03	7 07	17 25	7 31	17 08	9
10	5 09	19 45	5 43	19 25	6 13	18 48	6 41	18 02	7 08	17 24	7 31	17 07	10
11	5 10	19 45	5 44	19 24	6 14	18 47	6 42	18 00	7 09	17 23	7 32	17 07	11
12	5 11	19 45	5 45	19 23	6 15	18 45	6 43	17 59	7 10	17 23	7 32	17 07	12
13	5 12	19 45	5 46	19 22	6 15	18 44	6 44	17 57	7 11	17 22	7 33	17 07	13
14	5 13	19 45	5 48	19 21	6 16	18 42	6 45	17 56	7 12	17 21	7 33	17 07	14
15	5 14	19 44	5 49	19 19	6 17	18 41	6 46	17 54	7 13	17 20	7 33	17 07	14
16	5 15	19 44	5 50	19 18	6 18	18 39	6 47	17 53	7 13	17 19	7 34	17 07	16
17	5 16	19 44	5 51	19 17	6 19	18 38	6 48	17 52	7 14	17 18	7 34	17 07	17
18	5 17	19 43	5 52	19 16	6 20	18 36	6 49	17 50	7 15	17 18	7 35	17 07	18
19	5 18	19 43	5 53	19 15	6 21	18 35	6 49	17 49	7 16	17 17	7 35	17 07	19
20	5 19	19 42	5 54	19 13	6 22	18 33	6 50	17 48	7 17	17 16	7 35	17 08	20
21	5 20	19 42	5 55	19 12	6 23	18 32	6 51	17 46	7 18	17 15	7 35	17 08	21
22	5 21	19 41	5 56	19 11	6 24	18 30	6 52	17 45	7 18	17 15	7 36	17 08	22
23	5 23	19 41	5 57	19 09	6 25	18 28	6 53	17 44	7 19	17 14	7 36	17 08	23
24	5 24	19 40	5 58	19 08	6 26	18 27	6 54	17 42	7 20	17 13	7 36	17 08	24
25	5 25	19 39	5 59	19 07	6 27	18 25	6 55	17 41	7 21	17 13	7 36	17 09	25
26	5 26	19 39	6 00	19 05	6 28	18 24	6 56	17 40	7 22	17 12	7 36	17 09	26
27	5 27	19 38	6 02	19 04	6 29	18 22	6 57	17 39	7 22	17 12	7 36	17 09	27
28	5 28	19 37	6 03	19 03	6 30	18 21	6 58	17 37	7 23	17 11	7 37	17 10	28
29	5 28	19 36			6 30	18 19	6 58	17 36	7 24	17 11	7 37	17 10	29
30	5 30	19 36			6 31	18 18	6 59	17 35	7 24	17 10	7 37	17 11	30
31	5 32	19 35			6 32	18 16			7 25	17 10			31

LATITUDE CORRECTION FOR RISE TIMES

Latitude of Place	DECLINATION OF OBJECT												
	+30°	+25°	+20°	+15°	+10°	+5°	0°	-5°	-10°	-15°	-20°	-25°	-30°
°	m	m	m	m	m	m	m	m	m	m	m	m	m
-28	-35	-27	-21	-15	-10	-5	0	+5	+10	+16	+21	+28	+35
-30	-28	-22	-17	-12	- 8	-4	0	+4	+ 8	+13	+17	+23	+29
-32	-21	-17	-13	- 9	- 6	-3	0	+3	+ 6	+10	+13	+17	+22
-34	-14	-11	- 9	- 6	- 4	-2	0	+2	+ 4	+ 6	+ 9	+12	+15
-36	- 7	- 5	- 4	- 3	- 2	-1	0	+1	+ 2	+ 3	+ 4	+ 6	+ 7
-38	+ 1	+ 1	0	0	0	0	0	0	0	0	- 1	- 1	- 1
-40	+ 9	+ 7	+ 5	+ 4	+ 2	+1	0	-1	- 3	- 4	- 6	- 8	-10
-42	+18	+14	+11	+ 8	+ 5	+2	0	-3	- 5	- 8	-11	-15	-19
-44	+28	+22	+16	+12	+ 8	+4	0	-4	- 8	-12	-17	-23	-30

Values are *added* to time of *rising*, and *subtracted* from time of *setting*.
See also page 10.

SUNRISE AND SUNSET AT MELBOURNE (JULY TO DECEMBER)

	July				August				September				October				November				December				
	Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		Rise		Set		
d	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	h	m	d
1	7	37	17	11	7	21	17	32	6	43	17	58	5	57	18	24	5	14	18	54	4	52	19	26	1
2	7	37	17	11	7	20	17	33	6	42	17	59	5	56	18	24	5	13	18	55	4	52	19	27	2
3	7	36	17	12	7	19	17	34	6	40	18	00	5	54	18	25	5	12	18	56	4	52	19	28	3
4	7	36	17	12	7	18	17	35	6	39	18	01	5	53	18	26	5	11	18	57	4	52	19	29	4
5	7	36	17	13	7	17	17	35	6	37	18	01	5	51	18	27	5	10	18	58	4	51	19	30	5
6	7	36	17	14	7	16	17	36	6	36	18	02	5	50	18	28	5	09	18	59	4	51	19	**31**	6
7	7	36	17	14	7	15	17	37	6	34	18	03	5	48	18	29	5	08	19	00	4	51	19	**31**	7
8	7	36	17	15	7	14	17	38	6	33	18	04	5	47	18	30	5	07	19	01	4	51	19	32	8
9	7	35	17	15	7	13	17	39	6	31	18	05	5	45	18	31	5	06	19	02	4	51	19	13	9
10	7	35	17	16	7	12	17	40	6	30	18	06	5	44	18	32	5	05	19	04	4	51	19	34	10
11	7	35	17	16	7	11	17	40	6	28	18	06	5	42	18	**33**	5	04	19	05	4	51	19	35	11
12	7	34	17	17	7	10	17	41	6	27	18	07	5	41	18	**34**	5	03	19	06	4	51	19	**36**	12
13	7	34	17	18	7	09	17	42	6	25	18	08	5	39	18	35	5	02	19	07	4	52	19	36	13
14	7	34	17	18	7	07	17	43	6	24	18	09	5	38	18	36	5	02	19	08	4	52	19	**37**	14
15	7	33	17	19	7	06	17	44	6	22	18	10	5	36	18	37	5	01	19	09	4	52	19	38	15
16	7	33	17	20	7	05	17	45	6	20	18	11	5	35	18	37	5	00	19	10	4	52	19	38	16
17	7	32	17	20	7	04	17	45	6	19	18	12	5	34	18	38	4	59	19	11	4	52	19	**39**	17
18	7	32	17	21	7	02	17	46	6	17	18	12	5	32	18	39	4	58	19	12	4	53	19	40	18
19	7	31	17	22	7	01	17	47	6	16	18	13	5	31	18	40	4	58	19	13	4	53	19	**40**	19
20	7	30	17	23	7	00	17	48	6	14	18	14	5	29	18	41	4	57	19	14	4	54	19	41	20
21	7	30	17	23	6	59	17	49	6	13	18	15	5	28	18	42	4	57	19	16	4	54	19	41	21
22	7	29	17	24	6	57	17	50	6	11	18	16	5	27	18	43	4	56	19	17	4	55	19	40	22
23	7	29	17	25	6	56	17	51	6	10	18	17	5	25	18	44	4	55	19	18	4	55	19	42	23
24	7	28	17	26	6	55	17	51	6	08	18	17	5	24	18	45	4	55	19	19	4	56	19	43	24
25	7	27	17	26	6	53	17	52	6	06	18	18	5	23	18	47	4	54	19	20	4	56	19	43	25
26	7	26	17	27	6	52	17	53	6	05	18	19	5	22	18	48	4	54	19	21	4	57	19	44	26
27	7	26	17	28	6	50	17	54	6	03	18	20	5	20	18	49	4	54	19	22	4	57	19	44	27
28	7	25	17	29	6	49	17	55	6	02	18	21	5	19	18	50	4	53	19	23	4	58	19	44	28
29	7	24	17	30	6	48	17	56	6	00	18	22	5	18	18	51	4	53	19	24	4	59	19	45	29
30	7	23	17	30	6	46	17	56	5	59	18	23	5	17	18	52	4	52	19	25	4	59	19	45	30
31	7	22	17	31	6	45	17	57					5	15	18	53					5	00	19	45	31

GREEK ALPHABET

A	Alpha	α	H	Eta	η	N	Nu	ν	T	Tau	τ
B	Beta	β	Θ	Theta	θ	Ξ	Xi	ξ	T	Upsilon	υ
Γ	Gamma	γ	I	Iota	ι	O	Omicron	o	Φ	Phi	φ
Δ	Delta	δ	K	Kappa	κ	Π	Pi	π	X	Chi	χ
E	Epsilon	ε	Λ	Lambda	λ	P	Rho	ρ	Ψ	Psi	ψ
Z	Zeta	ζ	M	Mu	μ	Σ	Sigma	σ	Ω	Omega	ω

ECLIPSES

There will be four eclipses in 1983,two of the Sun and two of the Moon.

1 June 11 - Total Eclipse of the Sun

The path of total eclipse starts in the Indian Ocean, passes north of Australia, crossing Java,the Celebes and Southern New Guinea. Victoria will see it as a partial eclipse,starting just after 2.30 p.m. and ending just before 4.30 p.m.,the times varying with the location used for observation. About half the Sun will be covered by the Moon the extent of coverage increasing as one moves north.

2 June 25 - Partial Eclipse of the Moon

The penumbral stage will begin just before Moonrise. At 5 p.m. the Moon will rise over the lid of The Teapot. The umbral stage will begin one quarter of an hour later,reaching a maximum at 6.22 p.m. when one third of the Moon will be hidden. The umbra will leave the Moon at 7.30p.m.. The penumbral stage will end at 9 p.m.

Moon enters penumbra .....3h 43m AEST
Moon rises..... 4h 59m AEST
Umbral phase begins..... 5h 14m AEST
Middle of eclipse..... 6h 22m AEST
Umbral phase ends..... 7h 30m AEST
Penumbral phase ends..... 9h 02 AEST
Magnitude..... .339

3 December 4 - Annular Eclipse of the Sun

This eclipse will be invisible from Australia. For Victoria, the eclipse will take place below the western horizon. Between 8.48 p.m. and 12.13 p.m. the Moon's shadow will be sweeping across the far side of the Earth..

4 December 20 Penumbral Eclipse of the Moon

This eclipse will be invisible from Australia. The eclipse will start at 9.45a.m. and finish at 2 p.m. .During this period the Moon is not on our side of the Earth.

OCCULTATIONS OF PLANETS

1 November 8 - Occultation of Jupiter

At 2h 47m 30s a.m. Eastern Summer Time Jupiter will be occluded by the dark side of the Moon at a position angle of 113 degrees on the Moon. At 4h 54m 30s a.m. Jupiter will emerge at a position angle of 259 degrees on the bright side of the Moon

2 December 31 - Occultation of Venus

At 12h 14m 12s a.m. Eastern Summer time, the bright side of the Moon will occlude Venus at a position angle of 144 degrees on the Moon.Venus will re-emerge at 1h 7m 12s on the dark side of the Moon at a position angle of 266 degrees on the Moon.Glare from the Sun will make viewing difficult and caution should be exercised not to get the Sun into the field of view if a telescope or a pair of binoculars is used.

The Moon

PHASES OF THE MOON (AEST)

Lunation	New Moon		First Quarter		Full Moon		Last Quarter	
		d h m		d h m		d h m		d h m
742	Dec	15 19 18	Dec	24 00 16	Dec	30 21 32	Jan	6 14 01
743	Jan	14 15 08	Jan	22 15 33	Jan	29 08 26	Feb	5 05 18
744	Feb	13 10 32	Feb	21 03 31	Feb	27 18 57	Mar	6 23 16
745	Mar	15 03 44	Mar	22 12 25	Mar	29 05 26	Apr	5 18 39
746	Apr	13 17 59	Apr	20 18 57	Apr	27 16 30	May	5 13 43
747	May	13 05 25	May	20 00 17	May	27 04 47	Jun	4 07 08
748	Jun	11 14 37	Jun	18 05 46	Jun	25 18 32	Jul	3 22 13
749	Jul	10 22 18	Jul	17 12 50	Jul	25 09 27	Aug	2 10 53
750	Aug	9 05 18	Aug	15 22 46	Aug	24 01 00	Aug	31 21 23
751	Sep	7 12 35	Sep	14 12 23	Sep	22 16 37	Sep	30 06 06
752	Oct	6 21 35	Oct	14 05 41	Oct	22 07 54	Oct	29 13 37
753	Nov	5 08 21	Nov	13 01 48	Nov	20 22 30	Nov	27 20 51
754	Dec	4 22 26	Dec	12 23 09	Dec	20 12 00	Dec	27 04 53
755	Jan	3 15 16	Jan	11 19 48	Jan	19 00 04	Jan	25 14 48
756	Feb	2 09 46	Feb	10 13 59	Feb	17 10 40	Feb	24 03 12

The lunation numbers began with No. 1 on January 16th, 1923, which is E.W. Brown's Series *(Mon. Not. Roy. Astr. Soc.,93, 603 (1933)* These are used in occultation observations and general lunar work.

MOON AT PERIGEE

Date	Diam	Distance
	d h	' "	km
Jan	27 20	33 27	358,830
Feb	26 26	33 10	370.420
Mar	25 16	32 01	366,160
Apr	21 12	32 18	400,230
May	16 21	32 30	369,910
Jun	13 05	32 57	366,270
Jul	11 12	32 45	358,150
Aug	8 16	32 23	356,280
Sep	6 22	33 20	355,390
Oct	4 02	32 50	362,270
Oct	31 20	32 29	368,350
Nov	25 18	32 18	370,370
Dec	22 16	32 43	365 090

MOON AT APOGEE

Date	Diam	Distance
	d h	' "	km
Jan	14 12	29 24	408.530
Feb	10 20	29 25	408,580
Mar	10 00	29 29	418,020
Apr	6 19	29 33	406,660
May	4 23	29 33	406,830
Jun	1 05	29 31	407,180
Jun	29 09	29 27	408,210
Jul	26 11	29 24	409,730
Aug	22 12	29 25	408 830
Sep	18 07	29 28	409 010
Oct	16 21	29 30	407,160
Nov	12 14	29 33	404,000
Dec	11 00	29 32	407,340

The distances given above are the distances between centres of the Moon and the Earth. The apparent diameters apply to an observer at the quoted distance from the Moon, i.e. with the Moon on the horizon.

MOONRISE AND MOONSET AT MELBOURNE (JANUARY TO JUNE)

	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
d	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	21 36	6 33	22 02	8 59	20 29	7 44	20 30	9 51	20 24	10 41	21 48	11 46
2	22 22	7 46	22 33	10 08	20 59	8 53	21 07	10 54	21 13	11 36	22 46	12 21
3	23 00	9 00	23 02	11 13	21 29	10 00	21 47	11 55	22 05	12 26	23 44	12 52
4	23 34	10 11	23 32	12 17	22 01	11 05	22 33	12 52	23 01	13 09	.. ..	13 20
5	.. ..	11 18	.. ..	13 19	22 35	12 08	23 23	13 44	23 59	13 48	0 43	13 47
6	0 04	12 23	0 03	14 19	23 13	13 08	.. ..	14 31	.. ..	14 21	1 42	14 13
7	0 33	13 25	0 38	15 17	23 54	14 06	0 16	15 12	0 57	14 51	2 43	14 40
8	1 01	14 26	1 16	16 13	.. ..	15 01	1 13	15 49	1 57	15 19	3 47	15 10
9	1 31	15 27	1 59	17 06	0 41	15 50	2 11	16 21	2 56	15 46	4 53	15 43
10	2 03	16 26	2 47	17 53	1 32	16 34	3 10	16 50	3 58	16 13	6 03	16 22
11	2 38	17 23	3 39	18 36	2 27	17 14	4 10	17 18	5 00	16 42	7 15	17 09
12	3 18	18 18	4 35	19 14	3 24	17 49	5 11	17 45	6 06	17 13	8 25	18 05
13	4 02	19 09	5 33	19 48	4 23	18 20	6 13	18 13	7 14	17 48	9 30	19 10
14	4 52	19 56	6 31	20 18	5 22	18 49	7 16	18 42	8 24	18 31	10 28	20 21
15	5 45	20 37	7 30	20 46	6 22	19 16	8 22	19 15	9 35	19 21	11 16	21 34
16	6 41	21 13	8 29	21 13	7 22	19 43	9 30	19 52	10 41	20 19	11 56	22 46
17	7 39	21 45	9 29	21 40	8 24	20 11	10 38	20 36	11 42	21 25	12 31	23 56
18	8 37	22 15	10 30	22 08	9 27	20 41	11 46	21 28	12 33	22 35	13 01	.. ..
19	9 36	22 43	11 33	22 39	10 32	21 15	12 49	22 28	13 17	23 46	13 30	1 03
20	10 35	23 10	12 39	23 14	11 39	21 53	13 45	23 34	13 55	.. ..	13 59	2 08
21	11 35	23 37	13 46	23 55	12 46	22 39	14 34	.. ..	14 27	0 55	14 28	3 12
22	12 37	.. ..	14 54	.. ..	13 51	23 33	15 16	0 44	14 57	2 03	14 59	4 16
23	13 42	0 06	16 00	0 45	14 53	.. ..	15 52	1 54	15 26	3 10	15 35	5 18
24	14 50	0 39	17 01	1 44	15 47	0 35	16 24	3 05	15 55	4 15	16 14	6 20
25	16 01	1 18	17 56	2 51	16 35	1 44	16 54	4 13	16 25	5 20	16 59	7 18
26	17 11	2 04	18 42	4 04	17 16	2 56	17 24	5 21	16 58	6 24	17 48	8 13
27	18 18	3 00	19 22	5 19	17 52	4 09	17 54	6 27	17 35	7 28	18 42	9 01
28	19 18	4 05	19 57	6 33	18 24	5 21	18 26	7 33	18 17	8 29	19 39	9 44
29	20 10	5 17			18 55	6 31	19 01	8 38	19 04	9 27	20 36	10 21
30	20 53	6 32			19 25	7 39	19 40	9 41	19 56	10 19	21 34	10 53
31	21 30	7 47			19 57	8 46			20 51	11 05		

Astronomical Symbols

☿ Mercury ♀ Venus ⊕ Earth

♂ Mars ♃ Jupiter ♄ Saturn

⊙ Uranus ♆ Neptune ♇ Pluto

☉ or (303) Minor Planets

α Right ascension	δ Declination	μ Proper motion	π Parallax
θ Siderial time	*ly* Light year	*pc* Parsec	*a* Semi-major axis
e Eccentricity	*i* Inclination	*r* Radius vector	*P* Orbital period
A Azimuth	*z* Zenith distance	*H* Hour angle	*p* Position angle

β Latitude (geocentric)	λ Longitude (geocentric)
b Latitude (Heliocentric or galactic)	*l* Longitude (Heliocentric or galactic)
m Magnitude (apparent)	*M* Magnitude (absolute)
AU Astronomical Unit	ϕ Geographic latitude
Ω Longitude of ascending node	$\tilde{\omega}$ Longitude of perihelion
ω Argument of perihelion	*T* Time of perihelion passage
q Perihelion distance	Δ Geocentric distance

MOONRISE AND MOONSET AT MELBOURNE (JULY TO DECEMBER)

	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set	Rise	Set
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	22 32	11 22	.. ..	11 09	1 26	11 24	2 28	12 05	3 21	14 37	2 54	15 52
2	23 31	11 49	0 21	11 37	2 32	12 14	3 21	13 14	3 53	15 48	3 23	17 00
3	.. ..	12 15	1 25	12 09	3 37	13 13	4 07	14 28	4 23	16 58	3 55	18 08
4	0 30	12 41	2 31	12 47	4 37	14 21	4 47	15 42	4 53	18 08	4 30	19 14
5	1 30	13 08	3 40	13 32	5 29	15 35	5 22	16 56	5 24	19 17	5 10	20 17
6	2 34	13 38	4 48	14 28	6 14	16 52	5 54	18 08	5 58	20 25	5 55	21 16
7	3 41	14 14	5 53	15 34	6 53	18 08	6 25	19 19	6 35	21 31	6 46	22 08
8	4 50	14 56	6 52	16 47	7 27	19 21	6 56	20 30	7 17	22 32	7 41	22 52
9	6 02	15 47	7 41	18 03	7 59	20 33	7 28	21 38	8 05	23 27	8 39	23 31
10	7 10	16 49	8 23	19 20	8 29	21 43	8 04	22 44	8 58	.. ..	9 38	.. ..
11	8 13	17 59	9 00	20 34	9 00	22 50	8 43	23 47	9 54	0 16	10 37	0 03
12	9 07	19 14	9 32	21 45	9 33	23 56	9 27	.. ..	10 52	0 57	11 35	0 32
13	9 52	20 29	10 02	22 53	10 10	.. ..	10 16	0 45	11 51	1 32	12 32	0 58
14	10 30	21 42	10 32	24 00	10 50	0 59	11 10	1 36	12 49	2 03	13 31	1 23
15	11 03	22 52	11 03	.. ..	11 35	1 58	12 06	2 20	13 47	2 31	14 30	1 47
16	11 33	24 00	11 36	1 04	12 25	2 52	13 04	2 59	14 46	2 56	15 32	2 13
17	12 02	.. ..	12 13	2 07	13 19	3 40	14 02	3 32	15 45	3 21	16 37	2 41
18	12 31	1 05	12 54	3 07	14 16	4 22	15 01	4 02	16 46	3 46	17 44	3 13
19	13 02	2 09	13 40	4 04	15 14	4 58	16 00	4 29	17 50	4 13	18 54	3 51
20	13 36	3 12	14 31	4 56	16 12	5 30	16 59	4 54	18 57	4 43	20 02	4 38
21	14 13	4 14	15 26	5 42	17 11	5 59	17 59	5 19	20 05	5 18	21 05	5 34
22	14 56	5 13	16 23	6 22	18 09	6 26	19 01	5 45	21 13	6 00	22 00	6 40
23	15 44	6 08	17 21	6 57	19 08	6 51	20 05	6 13	22 18	6 50	22 47	7 51
24	16 36	6 58	18 20	7 28	20 08	7 16	21 11	6 45	23 16	7 48	23 26	9 05
25	17 32	7 42	19 18	7 56	21 10	7 42	22 18	7 21	.. ..	8 54	23 59	10 18
26	18 29	8 21	20 16	8 22	22 13	8 11	23 23	8 05	0 06	10 05	.. ..	11 29
27	19 28	8 55	21 14	8 47	23 18	8 44	.. ..	8 56	0 48	11 16	0 30	12 37
28	20 25	9 25	22 14	9 12	.. ..	9 22	0 24	9 56	1 24	12 27	0 58	13 44
29	21 23	9 52	23 16	9 39	0 24	10 07	1 19	11 03	1 56	13 36	1 27	14 51
30	22 21	10 18	.. ..	10 09	1 28	11 02	2 06	12 13	2 26	14 45	1 57	15 57
31	23 20	10 43	0 20	10 43			2 46	13 26			2 30	17 02

TABLE II : APPROXIMATE DECLINATION OF MOON

BEFORE Maximum NORTH Declination								AFTER Maximum NORTH Declination						
7d	6d	5d	4d	3d	2d	1d		1d	2d	3d	4d	5d	6d	7d
-3°	+2°	+7°	+12°	+16°	+20°	+22°	+23°	+22°	+20°	+16°	+12°	+7°	+2°	-3°
BEFORE Maximum SOUTH Declination								**AFTER Maximum SOUTH Declination**						
7d	6d	5d	4d	3d	2d	1d		1d	2d	3d	4d	5d	6d	7d
-2°	-7°	-11°	-15°	-18°	-21°	-22°	-23°	-22°	-21°	-18°	-15°	-11°	-6°	-1°

Table II : Approximate declination of the Moon for a given number of days before or after it reaches maximum declination. During 1982, the Moon's declination varies between about +23° to about -23°, e.g. for Jan 18d 18h, Table I shows that the Moon is 5 days before maximum south declination; Table II then indicates an approximate declination of the Moon to be about -11°.

SUN'S SELENOGRAPHIC COLONGITUDE

The Sun's selenographic colongitude, given below for each day of the year at 10h AEST, is obtained by subtracting the selenographic longitude of the Sun from 90° or 450°. It is numerically equal to the east selenographic longitude of the sunrise terminator measured from the mean centre of the disc; its approximate values at New Moon, First Quarter, Full Moon and Last Quarter are 270°, 0°, 90° and 180° respectively.

SUN'S SELENOGRAPHIC COLONGITUDE (At 0h UT)

d	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	d
1	109.5	126.4	107.1	124.7	130.6	149.4	155.8	174.7	193.3	199.3	217.0	222.0	1
2	121.7	138.6	119.3	136.9	142.8	161.4	168.0	186.9	205.5	211.5	229.1	234.5	2
3	133.8	150.7	131.4	149.1	155.0	173.6	180.2	199.1	217.7	223.6	241.3	245.5	3
4	146.0	162.9	143.6	161.2	167.2	185.8	192.4	211.3	229.8	235.8	253.4	258.4	4
5	158.1	175.0	155.8	173.4	179.4	198.0	204.6	223.4	242.0	248.0	265.6	270.6	5
6	170.3	187.2	167.9	185.6	191.7	210.1	216.8	235.6	254.2	260.1	277.7	282.6	6
7	182.4	199.3	180.1	197.7	203.7	222.3	229.0	247.8	266.4	272.3	289.9	294.4	7
8	194.5	211.4	192.2	209.9	215.9	234.5	241.2	260.0	278.6	284.5	302.0	307.0	8
9	207.6	223.6	204.4	222.1	228.1	246.7	253.4	272.2	290.7	296.6	314.2	319.2	9
10	218.8	235.7	216.5	234.2	250.3	258.9	265.6	284.4	302.9	308.7	326.4	331.4	10
11	230.9	247.8	228.7	246.4	252.5	271.1	278.8	296.6	315.1	321.0	338.6	343.5	11
12	243.0	260.0	240.8	258.6	264.7	283.2	290.0	308.8	327.3	333.2	350.8	355.7	12
13	255.1	272.1	253.0	270.7	276.9	295.5	302.4	321.1	339.6	345.4	3.0	7.9	13
14	267.3	284.3	265.1	282.9	289.0	307.8	314.4	333.3	351.8	357.6	15.5	20.1	14
15	279.4	296.4	277.3	295.1	301.3	320.0	326.7	345.5	4.0	9.8	27.4	32.3	15
16	291.6	308.6	289.5	307.3	313.5	332.2	338.9	357.7	16.3	22.1	39.6	44.5	16
17	303.7	320.8	301.6	319.5	325.7	344.4	351.1	10.0	28.5	34.3	51.7	56.7	17
18	315.9	332.9	313.8	331.7	337.9	356.7	3.4	22.2	40.9	46.5	63.9	68.9	18
19	327.1	345.1	326.0	344.1	350.1	8.1	15.6	34.5	52.9	58.7	76.1	81.0	19
20	340.2	357.3	338.2	355.1	2.4	21.2	27.9	46.7	65.2	70.9	88.5	93.2	20
21	352.4	9.5	350.4	8.4	14.6	33.4	40.1	59.0	77.4	83.1	100.5	105.4	21
22	4.6	21.7	2.6	20.6	26.9	46.7	52.4	71.2	89.6	95.4	112.7	117.6	22
23	16.8	33.9	14.8	32.8	39.1	57.9	64.7	83.5	101.8	107.5	124.9	129.7	23
24	29.0	46.1	27.0	45.3	51.3	70.2	76.9	95.7	114.0	119.7	137.0	141.9	24
25	41.1	58.3	39.2	57.3	63.6	82.4	89.1	107.9	126.2	131.9	149.2	154.0	25
26	53.3	70.5	51.5	69.5	75.8	94.7	101.4	120.1	138.4	144.1	161.4	166.2	26
27	65.5	82.7	63.7	71.7	88.1	106.9	113.6	132.3	150.6	156.2	173.5	178.3	27
28	77.7	94.0	75.9	94.0	100.5	119.1	125.8	144.5	162.6	168.4	185.6	190.4	28
29	89.9		88.1	106.2	112.5	131.5	138.1	156.7	175.0	180.5	197.8	202.6	29
30	102.1		100.3	118.4	124.7	143.6	150.3	168.9	187.1	192.7	209.9	214.7	30
31	114.3		112.5		137.0		162.5	181.1		204.8		226.8	31

From the above table it can be seen that the value of the Sun's selenographic colongitude increases by approximately 12°.2 per day or about 0°.5 per hour. The value affords an opportunity for an observer to record the exact conditions at the time of his observation and allows him to observe the object under the same illumination at some future time.

Ephemeris of the Moon (January to April)

Day	RA	Dec	HP	Long	Lat	RA	Dec	HP	Long	Lat
	January					February				
	h ′ ″	° ′	′ ″	° ′	° ′	h ′ ″	° ′	′ ″	° ′	° ′
1	8 17 25	22 11	61 15	121 32	2 26	11 46 44	7 01	59 34	174 10	5 07
2	9 20 38	19 16	60 45	136 34	3 34	12 38 40	1 27	58 36	188 18	5 10
3	10 19 53	15 10	60 02	151 18	4 27	13 28 33	-3 59	57 37	201 57	4 55
4	11 25 04	10 17	59 09	165 39	5 01	14 17 20	-9 04	56 41	215 08	4 25
5	12 06 49	5 01	58 14	179 34	5 17	15 05 54	-13 36	55 52	227 52	3 43
6	12 56 07	-0 20	57 19	193 02	5 14	15 54 52	-17 25	55 12	240 16	2 51
7	13 44 00	-5 30	56 30	206 07	4 55	16 44 38	-20 25	54 41	252 22	1 51
8	14 31 24	-10 18	55 47	218 49	4 22	17 35 18	-22 29	54 19	264 18	0 50
9	15 19 08	-14 35	55 12	231 14	3 37	18 26 39	-23 32	54 05	276 06	-0 14
10	16 07 44	-18 10	54 45	243 25	2 43	19 18 13	-23 31	53 59	287 53	-1 17
11	16 57 30	-20 56	54 24	255 25	1 43	20 09 24	-22 27	54 00	299 40	-2 16
12	17 48 21	-22 46	54 09	267 19	0 39	20 59 38	-20 23	54 06	311 31	-3 10
13	18 39 54	-23 34	53 59	279 08	-0 27	21 48 35	-17 25	54 18	323 28	-3 56
14	19 31 32	-23 18	53 56	290 56	-1 31	22 36 11	-13 41	54 35	335 32	-4 31
15	20 22 32	-22 00	53 57	302 44	-3 31	23 22 40	-9 22	54 55	347 44	-4 55
16	21 12 21	-19 43	54 04	314 34	-3 25	0 08 31	-4 37	55 20	0 07	-5 05
17	22 00 44	-16 36	54 17	326 29	-4 10	0 54 23	0 23	55 49	12 40	-5 01
18	22 47 45	-12 46	54 36	338 30	-4 44	1 41 05	5 28	56 22	25 25	-4 41
19	23 33 48	-8 23	55 01	350 40	-5 06	2 29 28	10 24	56 59	38 24	-4 08
20	0 19 28	-3 36	55 33	3 02	-5 14	3 20 27	14 58	57 41	51 38	-3 20
21	1 05 34	1 25	56 12	15 39	-5 08	4 14 45	18 53	58 26	65 11	-2 20
22	1 53 01	6 31	56 59	28 34	-4 46	5 12 47	21 50	59 10	79 03	-1 10
23	2 42 51	11 27	57 52	41 51	-4 08	6 14 14	23 30	59 52	93 16	0 06
24	3 36 01	15 59	58 48	55 32	-3 15	7 17 58	23 38	60 25	107 48	1 23
25	4 33 16	19 46	59 42	69 38	-2 09	8 22 08	22 06	60 47	122 37	2 35
26	5 34 43	22 26	60 30	84 10	-0 53	9 24 52	19 01	60 53	137 36	3 38
27	6 39 31	23 37	61 05	99 03	0 29	10 24 52	14 40	60 42	152 37	4 25
28	7 45 42	23 04	61 24	114 11	1 49	11 21 43	9 27	60 15	167 30	4 54
29	8 50 56	20 49	61 23	129 26	3 02					
30	9 53 16	17 07	61 02	144 37	4 02					
31	10 51 50	12 22	60 24	159 34	4 44					
	March					April				
1	12 15 45	3 48	59 34	182 06	5 03	15 18 23	-15 08	56 49	231 12	3 02
2	13 07 38	-1 55	58 43	196 19	4 53	16 09 53	-18 56	56 04	244 03	2 04
3	13 58 13	-7 21	57 48	210 05	4 26	17 02 00	-21 45	55 24	256 33	1 01
4	14 48 14	-12 16	56 53	223 22	3 45	17 54 30	-23 29	54 51	268 44	-0 03
5	15 38 21	-16 28	56 03	236 12	2 54	18 47 00	-24 07	54 28	280 43	-1 06
6	16 28 57	-19 49	55 20	248 39	1 57	19 38 58	-23 38	54 15	292 34	-2 06
7	17 20 11	-22 12	54 47	260 47	0 55	20 29 55	-22 05	54 13	304 22	-3 00
8	18 11 53	-23 33	54 23	272 43	-0 08	21 19 34	-19 34	54 20	316 14	-3 47
9	19 03 40	-23 49	54 10	284 32	-1 10	22 07 53	-16 13	54 37	328 14	-4 24
10	19 55 03	-23 00	54 06	296 19	-2 09	22 55 06	-12 07	55 01	340 24	-4 49
11	20 45 34	-21 10	54 10	308 08	-3 03	23 41 39	-7 28	55 31	352 50	-5 02
12	21 34 54	-18 24	54 22	320 03	-3 48	0 28 08	-2 24	56 04	5 31	-5 00
13	22 22 59	-14 49	54 40	332 08	-4 24	1 15 16	2 53	56 39	18 28	-4 42
14	23 10 00	-10 35	55 02	344 23	-4 48	2 03 50	8 09	57 13	31 40	-4 10
15	23 56 22	-5 50	55 28	356 51	-4 59	2 54 34	13 08	57 44	45 05	-3 23
16	0 42 40	-0 46	55 56	9 30	-4 56	3 48 07	17 33	58 11	58 47	-2 23
17	1 29 36	4 25	56 25	22 22	-4 37	4 44 45	21 04	58 33	72 29	-1 15
18	2 17 57	9 29	56 54	35 24	-4 04	5 44 12	23 23	58 51	86 23	-0 01
19	3 08 28	14 13	57 24	48 38	-3 17	6 45 32	24 15	59 04	100 22	1 13
20	4 01 48	18 18	57 54	62 03	-2 19	7 47 16	23 35	59 13	114 27	2 24
21	4 58 18	21 29	58 25	75 40	-1 12	8 47 53	21 25	59 17	128 35	3 25
22	5 57 45	23 27	58 54	89 29	0 01	9 46 19	17 56	59 17	142 47	4 15
23	6 59 17	23 59	59 20	103 31	1 14	10 42 07	13 24	59 10	156 59	4 48
24	8 01 27	22 58	59 42	117 46	2 24	11 35 31	8 10	58 57	171 09	5 04
25	9 02 45	20 26	59 57	132 12	3 26	12 27 06	2 33	58 38	185 12	5 02
26	10 01 59	16 34	60 01	146 46	4 14	13 17 38	-3 08	58 12	199 06	4 42
27	10 58 39	11 43	59 53	161 22	4 47	14 07 55	-8 35	57 40	212 46	4 06
28	11 52 55	6 13	59 34	175 54	5 00	14 58 34	-13 31	57 03	226 06	3 17
29	12 45 19	0 28	59 03	190 14	4 54	15 50 02	-17 43	56 26	239 12	2 19
30	13 36 34	-5 13	58 23	204 16	4 31	16 42 25	-20 59	55 49	251 56	1 15
31	14 27 24	-10 30	57 37	217 57	3 52					

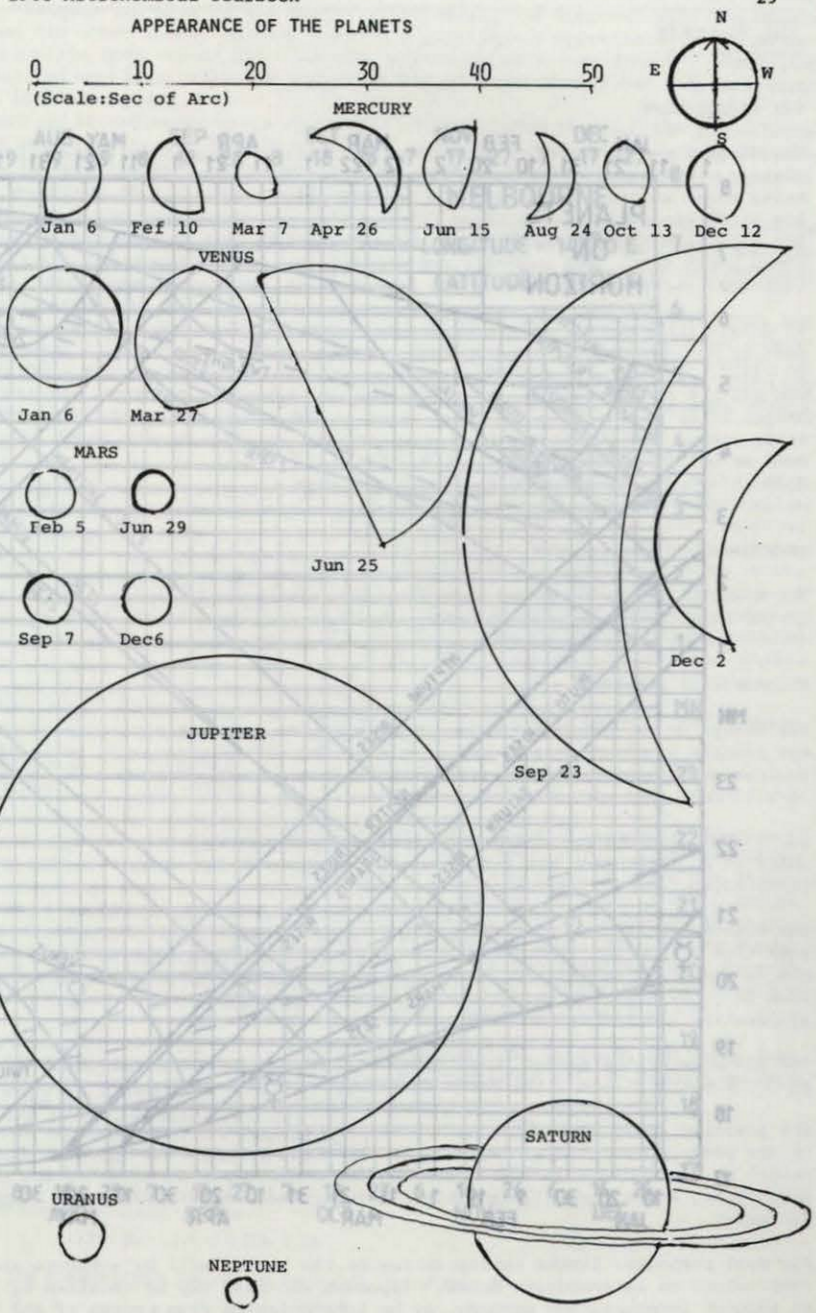
Ephemeris of the Moon (May to August)

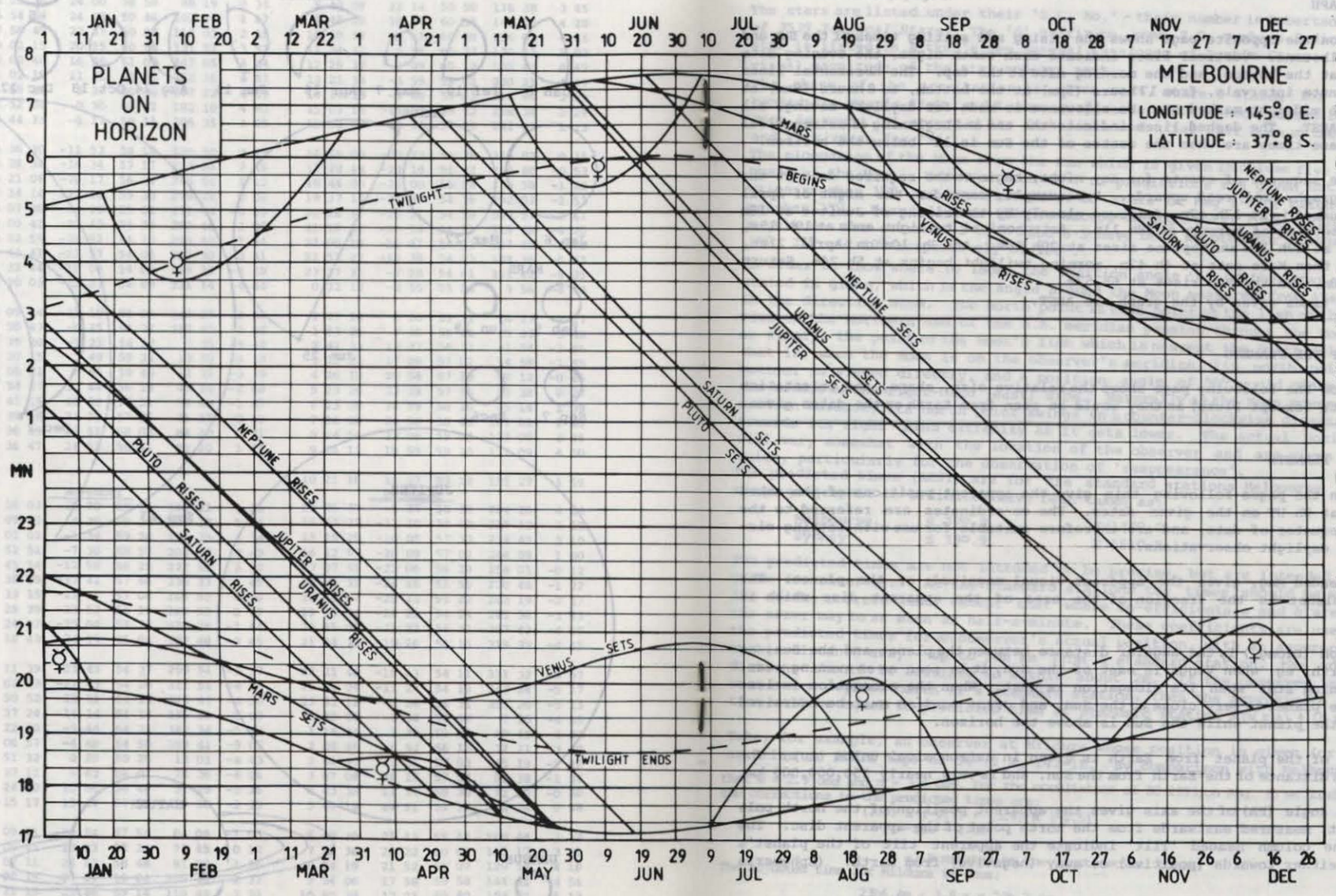
Day	RA	Dec	HP	Long	Lat	RA	Dec	HP	Long	Lat
	May					June				
	h ′ ″	° ′	′ ″	° ′	° ′	h ′ ″	° ′	′ ″	° ′	° ′
1	17 35 30	-23 11	55 15	264 22	0 08	20 47 19	-21 39	54 11	308 24	-3 27
2	18 28 45	-24 14	54 47	276 33	-0 57	21 36 21	-18 51	54 13	320 14	-4 20
3	19 21 31	-24 08	54 27	288 33	-2 00	22 22 40	-15 15	54 24	332 08	-4 51
4	20 13 11	-22 56	54 16	300 25	-2 56	23 09 43	-11 01	54 45	344 09	-5 11
5	21 03 20	-20 43	54 15	312 15	-3 45	23 55 08	-6 17	55 16	356 23	-5 16
6	21 51 55	-17 38	54 25	324 08	-4 24	0 40 42	-1 11	55 56	8 53	-5 07
7	22 39 07	-13 47	54 44	336 10	-4 52	1 27 23	4 05	56 43	21 43	-4 43
8	23 25 26	-9 19	55 13	348 24	-5 08	2 16 10	9 21	57 35	34 57	-4 03
9	0 11 30	-4 22	55 50	0 54	-5 09	3 08 00	14 19	58 26	48 34	-3 09
10	0 58 07	0 52	56 31	13 43	-4 55	4 03 40	18 41	59 13	62 34	-2 02
11	1 46 09	6 13	57 15	26 52	-4 26	5 03 24	22 03	59 51	76 54	-0 45
12	2 36 27	11 26	57 58	40 21	-3 41	6 06 32	24 02	60 17	91 30	0 36
13	3 29 49	16 11	58 35	54 08	-2 42	7 11 26	24 22	60 28	106 14	1 55
14	4 26 40	20 09	59 06	68 10	-1 32	8 15 50	22 59	60 25	121 00	3 07
15	5 26 50	22 58	59 27	82 22	-0 15	9 17 47	20 03	60 08	135 42	4 06
16	6 29 20	24 19	59 38	96 41	1 03	10 16 11	15 54	59 42	150 13	4 48
17	7 32 29	24 03	59 39	111 02	2 17	11 11 01	10 54	59 08	164 29	5 12
18	8 34 24	22 13	59 32	125 21	3 23	12 02 53	5 27	58 30	178 29	5 17
19	9 33 44	18 59	59 19	139 36	4 16	12 52 43	-0 10	57 53	192 11	5 03
20	10 29 55	14 40	59 00	153 45	4 52	13 41 34	-5 39	57 16	205 36	4 34
21	11 23 11	9 37	58 38	167 46	5 11	14 30 21	-10 47	56 41	218 43	3 50
22	12 14 11	4 08	58 14	181 37	5 12	15 19 49	-15 20	56 09	231 35	2 55
23	13 03 50	-1 29	57 48	195 16	4 55	16 10 26	-19 08	55 40	244 13	1 53
24	13 53 01	-6 56	57 20	208 43	4 22	17 02 20	-22 00	55 13	256 39	0 47
25	14 42 32	-12 00	56 50	221 57	3 35	17 55 14	-23 47	54 50	268 55	-0 21
26	15 32 59	-16 26	56 19	234 56	2 38	18 48 26	-24 26	54 30	281 01	-1 27
27	16 24 40	-20 02	55 49	247 41	1 34	19 41 06	-23 25	54 15	293 00	-2 28
28	17 17 27	-22 38	55 20	260 11	0 27	20 32 28	-22 19	54 06	304 53	-3 23
29	18 10 52	-24 06	54 54	272 29	-0 41	21 22 03	-19 46	54 03	316 44	-4 08
30	19 04 09	-24 24	54 33	284 35	-1 46	22 09 44	-16 23	54 08	328 35	-4 43
31	19 56 30	-23 33	54 19	296 32	-2 45					
	July					August				
1	22 55 49	-12 21	54 21	340 29	-5 06	1 42 49	5 57	55 50	26 00	-4 23
2	23 40 49	-7 48	54 43	352 30	-5 16	2 30 08	10 55	56 35	38 43	-3 41
3	0 25 30	-2 54	55 13	4 42	-5 11	3 20 26	15 32	57 27	51 47	-2 46
4	1 10 45	2 14	55 54	17 10	-4 53	4 14 35	19 32	58 23	65 15	-1 40
5	1 57 34	7 24	56 42	29 57	-4 19	5 13 03	22 33	59 19	79 10	-0 27
6	2 46 59	12 25	57 36	43 07	-3 31	6 15 30	24 14	60 10	93 32	0 51
7	3 40 02	16 59	58 33	56 42	-2 30	7 20 35	24 17	60 51	108 19	2 07
8	4 37 23	20 46	59 28	70 44	-1 18	8 26 05	22 34	61 16	123 24	3 15
9	5 39 02	23 22	60 14	85 11	0 01	9 29 50	19 12	61 22	138 40	4 10
10	6 43 55	24 25	60 48	99 59	1 22	10 30 26	14 32	61 09	153 55	4 48
11	7 49 56	23 43	61 05	115 01	2 38	11 27 33	9 02	60 38	168 59	5 05
12	8 54 39	21 17	61 05	130 08	3 43	12 21 39	3 07	59 53	183 44	5 01
13	9 56 15	17 24	60 46	145 11	4 33	13 13 35	-2 47	58 59	198 02	4 38
14	10 54 03	12 29	60 13	160 02	5 03	14 04 19	-8 22	58 03	211 51	4 00
15	11 48 18	6 58	59 30	174 33	5 14	14 54 42	-13 23	57 08	225 12	3 09
16	12 39 50	1 14	58 41	188 40	5 04	15 45 28	-17 37	56 18	238 07	2 10
17	13 29 42	-4 24	57 51	202 23	4 38	16 36 57	-20 57	55 36	250 40	1 07
18	14 18 53	-9 41	57 04	215 42	3 57	17 29 14	-23 13	55 01	262 56	0 02
19	15 08 15	-14 24	56 21	228 39	3 05	18 21 58	-24 23	54 35	275 00	-1 02
20	15 58 25	-18 23	55 44	241 17	2 05	19 14 34	-24 24	54 16	286 56	-2 03
21	16 49 42	-21 27	55 13	253 40	1 01	20 06 20	-23 18	54 04	298 48	-2 57
22	17 41 59	-23 28	54 47	265 52	-0 06	20 56 41	-21 10	53 58	310 38	-3 44
23	18 34 48	-24 23	54 27	277 55	-1 11	21 45 19	-18 08	53 58	322 29	-4 21
24	19 27 24	-24 09	54 12	289 52	-2 13	22 32 12	-14 21	54 04	334 23	-4 47
25	20 19 02	-22 49	54 02	301 45	-3 08	23 17 38	-9 59	54 16	346 21	-5 00
26	21 09 04	-20 29	53 57	313 36	-3 54	0 02 09	-5 13	54 33	358 25	-5 00
27	21 57 15	-17 17	53 59	325 27	-4 31	0 46 24	-0 12	54 55	10 35	-4 46
28	22 43 39	-13 23	54 07	337 20	-4 56	1 31 14	4 54	55 22	22 55	-4 19
29	23 28 43	-8 58	54 22	349 17	-5 08	2 17 29	9 53	55 56	35 26	-3 40
30	0 13 02	-4 10	54 43	1 20	-5 07	3 06 03	14 32	56 35	48 10	-2 49
31	0 57 26	0 52	55 13	13	-4 52	3 57 48	18 39	57 19	61 12	-1 47

EPHEMERIS OF THE MOON (SEPTEMBER TO DECEMBER)

Day	RA	Dec	HP	Long	Lat	RA	Dec	HP	Long	Lat
	h ' "	September ° '	' "	° '	° '	h ' "	October ° '	' "	° '	° '
1	4 53 18	21 54	58 08	74 34	-0 39	7 38 28	24 21	59 18	112 20	2 47
2	5 52 36	24 00	58 58	88 19	0 34	8 40 09	22 14	59 50	126 38	3 45
3	6 54 58	24 38	59 46	102 29	1 47	9 40 28	18 40	60 15	141 13	4 28
4	7 58 49	23 37	60 27	117 03	2 55	10 38 38	13 52	60 28	156 01	4 55
5	9 02 15	20 55	60 56	131 57	3 52	11 34 32	8 14	60 27	170 53	5 02
6	10 03 40	16 46	61 09	147 05	4 34	12 28 37	2 09	60 12	185 43	4 49
7	11 02 19	11 31	61 03	162 16	4 57	13 21 38	-3 59	59 42	200 21	4 17
8	11 58 15	5 37	60 40	177 22	4 59	14 14 18	-9 48	59 01	214 40	3 29
9	12 52 04	-0 30	60 01	192 10	4 40	15 07 16	-14 57	58 12	228 34	2 29
10	13 44 33	-6 27	59 11	206 35	4 05	16 00 52	-19 13	57 19	242 01	1 23
11	14 36 30	-11 53	58 14	220 30	3 15	16 55 09	-22 22	56 28	255 02	0 15
12	15 28 34	-16 34	57 17	233 56	2 16	17 49 44	-24 18	55 42	267 40	-0 53
13	16 21 08	-20 17	56 24	246 54	1 12	18 44 00	-25 00	55 04	279 58	-1 56
14	17 14 14	-22 56	55 38	259 28	0 06	19 37 14	-24 29	54 36	292 02	-2 53
15	18 07 36	-24 25	55 01	271 44	-0 59	20 28 51	-22 51	54 18	303 57	-3 41
16	19 00 43	-24 43	54 33	283 46	-2 00	21 18 32	-20 14	54 11	315 48	-4 20
17	19 52 55	-23 52	54 15	295 40	-2 54	22 06 18	-16 47	54 12	327 40	-4 48
18	20 43 41	-21 57	54 06	307 30	-3 41	22 52 27	-12 38	54 23	339 36	-5 03
19	21 32 44	-19 06	54 04	319 20	-4 18	23 37 32	-7 58	54 41	351 41	-5 05
20	22 20 03	-15 27	54 09	331 14	-4 44	0 22 12	-2 55	55 04	3 56	-4 53
21	23 05 54	-11 10	54 20	343 13	-4 58	1 07 14	2 20	55 31	16 23	-4 27
22	23 50 47	-6 25	54 37	355 20	-4 58	1 53 25	7 35	56 01	29 03	-3 48
23	0 35 20	-1 21	54 57	7 35	-4 45	2 41 33	12 37	56 31	41 54	-2 56
24	1 20 15	3 49	55 21	19 58	-4 18	3 32 22	17 09	57 01	54 58	-1 55
25	2 06 22	8 55	55 48	32 31	-3 39	4 26 19	20 56	57 29	68 12	-0 46
26	2 54 27	13 44	56 18	45 14	-2 48	5 23 26	23 38	57 56	81 38	0 27
27	3 45 15	18 00	56 51	58 09	-1 47	6 23 08	24 59	58 20	95 14	1 39
28	4 39 18	21 28	57 26	71 17	-0 40	7 24 08	24 50	58 43	109 02	2 46
29	5 36 39	23 51	58 03	84 40	0 31	8 24 56	23 08	59 03	123 00	3 45
30	6 36 47	24 52	58 41	98 20	1 41	9 24 13	19 59	59 20	137 09	4 30
31						10 21 16	15 37	59 32	151 27	4 59
		November					December			
1	11 16 03	10 20	59 37	165 51	5 10	13 36 37	-5 37	58 24	204 26	4 08
2	12 09 03	4 30	59 33	180 17	5 01	14 27 27	-11 10	58 00	218 10	3 15
3	13 01 02	-1 34	59 20	194 39	4 34	15 19 26	-16 05	57 33	231 42	2 10
4	13 52 51	-7 30	58 57	208 53	3 49	16 12 57	-20 09	57 02	244 59	1 00
5	14 45 14	-12 58	58 25	222 52	2 52	17 07 51	-23 06	56 29	258 01	-0 12
6	15 38 39	-17 41	57 46	236 33	1 45	18 03 31	-24 48	55 55	270 48	-1 22
7	16 33 15	-21 22	57 04	249 52	0 34	18 58 57	-25 13	55 22	283 19	-2 27
8	17 28 39	-23 52	56 20	262 50	-0 37	19 53 04	-24 21	54 54	295 36	-3 23
9	18 24 07	-25 04	55 39	275 28	-1 44	20 45 05	-22 22	54 31	307 42	-4 10
10	19 18 43	-24 59	55 04	287 48	-2 45	21 34 35	-19 26	54 16	319 39	-4 45
11	20 11 39	-23 43	54 37	299 54	-3 37	22 21 46	-15 43	54 11	331 32	-5 07
12	21 02 23	-21 23	54 20	311 51	-4 50	23 07 04	-11 24	54 16	343 24	-5 17
13	21 50 52	-18 11	54 13	323 43	-4 50	23 51 12	-6 38	54 31	355 20	-5 13
14	22 37 24	-14 14	54 17	335 36	-5 09	0 35 04	-1 34	54 57	7 26	-4 55
15	23 22 30	-9 44	54 31	347 34	-5 14	1 19 34	3 39	55 33	19 45	-4 24
16	0 06 57	-4 48	54 55	359 41	-5 05	2 05 45	8 52	56 16	32 21	-3 39
17	0 51 32	0 25	55 25	12 01	-4 43	2 54 37	13 51	57 03	45 19	-2 42
18	1 37 11	5 43	56 01	24 36	-4 06	3 47 04	18 19	57 52	58 38	-1 35
19	2 24 50	10 54	56 40	37 29	-3 16	4 43 38	21 57	58 38	72 20	-0 20
20	3 15 17	15 44	57 18	50 38	-2 15	5 44 10	24 21	59 17	86 24	0 58
21	4 09 11	19 54	57 54	64 04	-1 05	6 47 30	25 13	59 46	100 44	2 13
22	5 06 41	23 03	58 24	77 45	0 10	7 51 36	24 22	60 03	115 17	3 21
23	6 07 11	24 52	58 48	91 38	1 26	8 54 19	21 52	60 07	129 54	4 16
24	7 09 19	25 07	59 04	105 40	2 37	9 54 06	17 58	59 58	144 31	4 54
25	8 11 15	23 46	59 14	119 48	3 39	10 50 28	13 01	59 40	159 01	5 13
26	9 11 21	20 55	59 17	133 59	4 29	11 43 47	7 26	59 15	173 19	5 13
27	10 08 41	16 48	59 15	148 12	5 01	12 34 55	1 33	58 46	187 24	4 53
28	11 03 13	11 46	59 08	162 23	5 16	13 24 55	-4 18	58 15	201 14	4 17
29	11 55 27	6 09	58 57	176 30	5 11	14 14 50	-9 52	57 43	214 48	3 28
30	12 46 15	0 15	58 42	190 32	4 48	15 05 30	-14 52	57 13	228 08	2 27
31						15 57 33	-19 06	56 43	241 14	1 20

APPEARANCE OF THE PLANETS




PLANETS ON HORIZON
MELBOURNE
LONGITUDE : 145°0 E.
LATITUDE : 37°8 S.
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
MN
TWILIGHT
TWILIGHT BEGINS
TWILIGHT ENDS
MARS RISES
MARS SETS
VENUS RISES
VENUS SETS
MERCURY RISES
MERCURY SETS
JUPITER RISES
JUPITER SETS
SATURN RISES
SATURN SETS
URANUS RISES
URANUS SETS
NEPTUNE RISES
NEPTUNE SETS
PLUTO RISES
PLUTO SETS

THE PLANETS

THE PLANETGRAPH

The diagram on the opposite page shows the rising and setting times of the Sun and planets at Melbourne. Vertical lines indicate each tenth night, the evening date being shown at the bottom, and the morning date at the top. The horizontal lines are at 20 minute intervals, from 17 hours (5pm) at the bottom, to 8 hours (8am) at the top, with midnight marked MN No allowance is made for daylight saving, all times being AEST. The dashed lines indicate the end and beginning of astronomical twilight; these times are when the centre of the Sun is 18° below the horizon.

To obtain the sequence of events for any night, begin at the required date at the foot of the graph, and read upwards. For example, consider the night of April 20 - 21st. Sunset is at 17h 47m, followed closely by the rising of Jupiter at 18h 00m and the setting of Mercury at 18h 11m. Astronomical twilight ends at 19h 15m, Uranus rises at 19h 22m and Neptune rises at 20h 56m. At 3h 10m on April 21st, Venus rises, then Mars sets at 4h 42m, morning twilight begins at 5h 24m, Saturn sets at 5h 58m, and the Sun rises at 6h 52m.

NOTE : The times given by the graph are AEST.

APPEARANCE OF THE PLANETS

The diagram on the following page shows the relative size, shape, and orientation of the planets (except Pluto) as they would be seen from Earth on the dates given.

EPHEMERIS OF PLANETS

The tables on the pages following this give the apparent positions of the naked eye planets at 0h UT on the given dates. The co-ordinates are referred to the equinox and equator of date, and are therefore suitable for use with setting circles to make daylight observations.

The column headed Mag, gives the apparent visual magnitude of the planet. The phase of a planet is the fraction of the area of the apparent disc which is illuminated.

The elongation (Elong.) is the angular distance between the planet and the Sun, as seen from Earth, eg. when Venus is east of the Sun, it is seen as an evening star, and is a morning star when its elongation is west. When the elongation is less than 10°, the planet is very close to the Sun, and *great caution* must be exercised if locating the planet while the Sun is above the horizon.

The distance of the planet from Earth is given in astronomical units (AU). The AU is the mean distance of the Earth from the Sun. and is very nearly 150,000,000 km.

The position angle (PA) of the axis gives the apparent position of the north pole of the planet, measured eastwards from the north point of the apparent disc. The values in the column headed 'Tilt' indicate the apparent tilt of the planet's north pole, either towards (positive) or away (negative) from Earth. (Ephemeris for Mars).

For most purposes, linear interpolation of the tables will be accurate enough to find values on intermediate dates. Improved accuracy may be obtained by the use of 4-point interpolation methods, or by interpolating from a graph of the values.

LUNAR OCCULTATIONS

In its orbit around the Earth, the Moon moves approximately its own diameter eastward relative to the stars each hour. In doing so, it inevitably occults some stars. Because the size of the Earth is not negligible compared with the Moon's distance (in other words, because the Moon's parallax is appreciable), the apparent path of the Moon viewed from different places can vary considerably. Predicted occultations seen from Melbourne and/or Sydney of Stars down to Mag 7·5, are given on the following pages.

The stars are listed under their 'Z.C. No.' - their number in Robertson's *Catalogue of 3539 Zodiacal Stars*. The 'd' suffix on some Z.C. Numbers indicates that the star is listed in Aitken's *New General Catalogue of Double Stars*. The apparent visual magnitude of the star appears next.

The phase of the occultation is given next, where D stands for disappearance behind the Moon's limb, and R means reappearance as the Moon passes off. When the Moon is young 'D' occurs at its dark limb, and after Full Moon at the bright limb; and vice versa for 'R'.

The elongation of the Moon from the Sun which is given in column five indicates the phase of the Moon. Near New Moon (0°) no predictions are given until the elongation reaches 15° and are restricted to stars of Mag 1·9 or brighter until it reaches 25°. Near Full Moon (180°), except during a total lunar eclipse, limiting magnitudes for stars of 3·0, 5·5 and 6·5 have been adopted for elongations within 15°, 25° and 40° respectively of 180°.

In order to know where to look, the position angle 'P' of the star at the time stated is given, which is the angle around the Moon measured from the north point in the direction NESW. The north point is that point on the limb of the Moon which lies on the northern end of the R.A. meridian passing through the Moon's centre, or simply, the point of the Moon's limb which is nearest the North Celestial Pole; that is, when the Moon is on the observer's meridian, its north point is at the bottom, as viewed directly, and a position angle of 90° would place the star on the middle of the right-hand (east) side. Naturally as the Moon moves towards the western horizon, its north point swings in a counter-clockwise direction, getting towards its right - hand extremity as it gets lower. The actual position angles will vary somewhat with the location of the observer and are given merely as a guide, particularly for the observation of 'reappearance'.

The predicted times (AEST) are for the standard stations Melbourne and Sydney, whose geographic co-ordinates have been taken as:

Melbourne	S 37°.8	E 145°.0
Sydney	S 33°.9	E 151°.2

The predicted times are not intended to be precise, but are intended rather as a guide for observers. At the standard stations the times should be within about 10s of the correct time, except that where co-efficients *a* and *b* are not given, the error may be as much as half-a-minute. These coefficients are used to adjust the predicted times for an observer's actual position, with an accuracy depending on his distance away - up to 500 km from a standard station, the adjusted predictions should be accurate to within about 2m. If the observer is *w* degrees west and *n* degrees north of a standard station, then the approximate occultation time will be equal to predicted time at standard station $+(w \times a) + (n \times b)$.

Take, for example, an observer at Mildura whose position is given (or taken from an atlas or field map) as 34°.2 S, 142·1E. By comparison with Melbourne we find that w = 2.9 deg and n = 3.6 deg. For the occultation of ZC 2193,on Aug. 15 we find the corrections to the predicted times are;

$$(2.9) \times (-0.7) + (3.6) \times (-0.5)$$
$$= -203 - 1.80$$
$$= -3.8 \text{ minutes to the first decimal place.}$$

The adjusted time for Mildura is thus;

$$23h6.4m - 3.8\ m = 23h\ 2.6m$$

This is for the disappearance behind the dark side of the Moon.

LUNAR OCCULTATIONS

Date	Z.C. No.	Mag.	Ph.	Elg.	Melbourne UT h m	a m/dg	b m/dg	P dg	Sydney UT h m	a m/dg	b m/dg	P dg
Jan 1	192	7.1	D.D.	46	NBM				19 54.0	-0.6	1.4	83
	83	6.9	D.D.	69	20 30.8	...	...	356	20 45.7	...	...	352
26	936	5.9	D.D.	147	23 46.0	...	...	16	.. ..			
31	1651	4.1	R.D.	216	22 06.0	...	...	359	.. ..			
Feb 3	1897	7.4	D.D.	244	.. ..				0 49.8	...	...	200
5	2128	5.8	R.D.	269	3 14.0	-1.1	-1.8	294	3 12.9	-1.0	-2.2	312
8	2509	6.0	R.D.	303	3 29.9	0.0	-2.0	307	3 19.4	0.3	-2.6	326
20	532	7.2	D.D	86	19 49.8	...	...	135	20 0.9	-2.1	-0.6	127
Mar 3	1965	6.5	R.D.	225	3 4.2	-3.6	1.5	246	3 24.4	-2.5	-0.1	276
6	2331	6.4	R.D.	260	2 2.3	-1.5	-0.7	252	2 7.7	-1.4	-1.2	273
8	2595	5.7	R.D.	283	4 2.7	-0.3	-3.3	327	.. ..			
18	384	5.7	D.D.	44	19 53.3	...	...	4	.. ..			
19	505	7.0	D.D.	56	20 0.1	-1.0	1.3	85	GS1			
28	1689	5.5	D.D.	165	3 54.4	-0.6	0 7	105	4 2.1	-0.6	1.4	85
Apr 2	2401	5.6	R.D.	239	23 5.8	0.5	-2.6	334	22 48.1	...	...	2
17	761	6.7	D.D.	51	18 50.6	-1.8	2.7	32	.. ..			
22	1499	7.3	D.D.	118	22 21.6	...	...	197	22 8.7	-0.5	-1.6	159
23	1621	7.5	D.D.	131	22 9.4	-1.5	-0.8	129	22 17.8	-1.9	-0.1	109
May 2	2630	5.1	R.D.	232	1 28.8	-1.7	-1.1	274	1 33.7	-1.7	-1.8	293
7	3304	6.4	R.D.	287	.. ..				3 53.0	-1.3	2.4	203
8	3428	5.2	R.D.	299	5 33.8	-1.6	-1.2	270	5 39.4	-2.2	-1.8	281
18	1334	7.0	D.D.	74	18 33.2	-1.7	-0.1	113	18 45.0	-1.9	0.4	96
21	1701	5.1	D.D.	113	18 55.1	-2.6	-0.2	78	.. ..			
22	1813	6.0	D.D.	127	20 58.3	-1.1	-1.9	152	21 0.4	-1.6	-1.3	131
29	2589	4.8	R.D.	203	5 52.8	...	...	191	6 9.8	...	...	204
29	2714	6.1	R.D.	211	22 32.7	-0.1	-2.8	318	22 15.7	...	...	351
Jun 1	2991	6.2	R.D.	214	.. ..				0 3.6	-1.8	1.4	220
2	3243	7.4	D.D.	256	.. ..				23 56.8	...	...	161
5	3506	63	R.D.	281	5 51.4	...	...	312	.. ..			
19	1897	7.4	D.D.	109	18 25.2	-1.7	-1.4	117	18 33.7	-2.5	-0.6	97
Jul 13	1499	7.3	D.D.	40	.. ..				18 21.4	...	...	189
19	2210	6.8	D.D.	117	18 16.8	-1.4	-1.9	125	18 21.4	-2.1	-1.2	105
20	2353	4.6	D.D.	130	22 4.8	...	...	181	21 56.2	-1.9	-2.8	149
22	2630	5.1	D D.	153	22 48.2	-2.6	3.4	45	23 26.8	...	...	14
29	3428	5.2	R.D.	222	5 7.3	-0.3	3.4	191	5 21.6	0.0	3.6	187
Aug 15	2193	6.1	D.D.	90	23 6.4	-0.7	-0.5	139	23 9.0	-0.5	-0.1	128
16	2301	6.8	D.D.	100	NBM				18 11.7	-3.7	2.2	61
16	2322	4.3	D.D.	102	.. ..				23 16.8	...	...	166
18	2584	6.9	D.D.	124	22 49.4	...	...	154	22 54.5	-2.4	-1.8	139
19	2589	4.8	D.D.	125	0 9.5	-1.5	0.2	116	0 18.9	-1.2	0.4	111
27	76	5.9	R.D.	215	5 7.3	-2.5	0.4	289	5 23.4	-2.0	0.6	287
28	192	5.3	R.D.	225	1 52.9	-0.1	3.1	183	2 6.1	-0.0	3.5	181
Sep 3	1030	3.2	R.D.	300	4 34.3	-0.1	0.5	215	4 38.0	-0.4	0.7	217
12	2259	6.7	D.D.	70	19 52.5	-1.4	0.9	95	20 5.4	-1.1	1.5	82
15	2694	6.4	D.D.	106	22 20.6	-0.8	3.0	46	22 35.5	-0.3	3.2	40
16	2835	7.1	D.D.	116	20 41.5	-3.1	-3.8	139	20 50.2	-3.1	-1.9	125
16	2836	5.6	D.D.	116	21 4.3	...	...	17	DB			
17	2857	6.7	D.D.	118	2 1.8	-0.5	0.5	119	GS1			
18	3090	6.9	D.D.	138	21 28.3	-1.9	2.0	47	21 48.6	-1.7	2.6	41
26	384	5.7	R.D.	218	0 21.1	-1.1	0.3	232	0 30.7	-1.4	0.6	232
27	510	7.2	D.D.	231	3 12.8	...	...	338	3 21.8	...	...	346
28	646	6.1	R.D.	243	1 11.6	...	..	181	1 17.7	...	...	182
28	651	5.9	R.D.	243	2 2.0	0.0	1.8	193	2 10.1	-0.1	2.2	192
28	665	5.7	R.D.	245	5 30.5	-2.0	1.1	241	NB2			
Oct 9	2209	5.9	D.D.	39	.. ..				20 22.5	...	...	165
9	2213	5.9	D.D.	39	21 2.9	-0.0	0.6	110	GBG			
13	2790	6.2	D.D.	86	20 51.9	-1.8	0.5	104	21 4.4	-1.5	0.7	101
13	2803	6.9	D.D.	87	23 22.7	-0.7	0.5	117	23 28.1	-0.5	0.4	116
15	3046	7.1	D.D.	107	20 4.6	-1.0	4.4	18	20 27.1	-0.5	4.9	12
15	3050	7.3	D.D.	108	20 59.0	-1.1	3.0	35	21 17.0	-0.8	3.1	33

LUNAR OCCULTATIONS (CONTINUED)

Date	Z.C. No.	Mag.	Ph.	Elg.	Melbourne UT h m	a m/dg	b m/dg	P dg	Sydney UT h m	a m/dg	b m/dg	P dg
Oct 19	3425	4.6	D.D.	142	0 1.2	...	...	342	0 12.2	...	...	350
Nov 2	1734	4.6	R.D.	318	4 37.5	-0,4	-2.5	339	NB2			
7JUPITER		-1.4	D.D.	30	17 47.5	-1.3	0.3	113	17 56.2	-1.0	0.6	105
7JUPITER		-1.4	R.B.	30	18 54.5	-0.4	1.6	259	19 2.0	-0.2	1.3	265
8	2562	7.1	D.D.	43	19 36.9	-1.0	0.3	118	19 43.5	-0.7	0.4	113
9	2719	5.8	D.D.	54	19 18.6	-2.1	-0.9	133	19 27.7	-1.7	-0.5	128
13	3150	6.5	D.D.	89	0 6.5	-0.6	0.4	122	GS1			
13	3265	6.6	D.D.	99	22 17.8	-1.9	0.7	105	22 31.4	-1.6	0.6	107
17	76	5.9	D.D.	134	2 3.9	-0.4	2.1	46	2 13.7	-0.2	2.1	42
29	1702	5.1	R.D.	287	4 8.3	-1.0	-1.7	299	NB2			
Dec 7	2823	7.0	D.D.	34	20 23.4	...	...	12	GS1			
9	3090	6.9	D.D.	57	22 15.2	0.4	2.0	40	GS1			
9	3092	6.2	D.D.	57	22 27.0	...	...	148	GBG			
14	128	7.3	D.D.	112	22 11.8	-1.8	1.4	81	22 27.2	-1.6	1.4	82
18	633	5.4	D.D.	160	23 23.8	...	...	139	23 36.8	...	...	134
22	1270	6.1	R.D.	213	GS2				22 41.2	...	...	339
23	1274	5.7	R.D.	214	0 6.7	-1.9	-2.8	334	0 7.2	...	...	344
31	VENUS	-3.6	D.B.	319	3 14.2	0.5	-2.1	144	3 3.9	0.3	-1.9	131
31	VENUS	-3.6	R.D.	320	4 7.2	-0.3	-1.3	266	4 3.9	-0.4	-1.5	280

Accurate timing of listed occultations is required and should be stated to one-tenth or one-fifth of a second. It is very desirable that all of an observer's observations be made from the same location and altitude, using the same equipment, and it is suggested that *after* members have made a few timings, they then invoke the assistance of our Computing Section for a check of their positions.

Radio VNG, Lyndhurst (37 km S.E. of Melb), transmits a time signal which may be used in timing all occultation events. Times and frequencies are shown below:

Time	0945 - 2130	2245 - 2230	2145 - 0930
Frequency (KHz)	4,500	7,500	12,000

GRAZING OCCULTATIONS

These charts show the north or south limits for grazing occultations of stars brighter than magnitude 7.5. Observers along these tracks will see the the star appear to graze the dark limb of the Moon. Some grazing occultations will be in daylight and optically invisible. Tracks start in the west about the time given in the table, being dependant on irregularities in the Moon surface. Tick marks along the line occur at five minute intervals, each reading as an exact five minute reading on a clock showing UT. Where the letters A, B. or S, are given, A means the Moon is low in the sky, B that the bright limb interferes S that daylight interferes.

Observers a few kilometers either side of these tracks will probably see the the star disappear and reappear several times as features on the dark edge of the Moon are swept across the beam of light coming from the star. By recording times of these events to the precision of a second ore better, a knowledge of the shape of the edge and the motion of the Moon is being built up by the Royal Greenwhich and the U.S. Naval Observatories. Those observsers near these tracks who are genuinely and seriously interested in providing profitable observations, should write to The Occultation Section, H.M. Nautical Almanac Office, Royal Greenwich Observatory, Hailsham Sussex, B N 271R P, England, at least two months before the event, giving approximate latitude and longitude so that detailed predictions can be provided.

Though not a good year for Victorians, any interested observers should contact P.F. Raw 6 Larool Close Doncaster East Ph. 8488163.

Track No.	ZC No	Mag	Date and Time at the Beginning of Track in the West (AEST) Mon	d	h	m	s	Phase %	N or S Limit
1	593	5.76	Jan	24	9	52	13.16	73.20	s
2	532	7.17	Feb	20	10	2	11.75	46.42	s
3	859	6.49	Feb	22	11	18	17.14	68.98	s
4	2210	6.80	Mar	4	18	51	14.22	67.10	s
5	2692	5.71	Apr	4	16	14	18.88	55.82	s
6	3081	6.68	Apr	7	15	42	45.82	28.27	s
7	3090	6.88	Apr	7	16	46	34.46	27.85	s
8	761	6.66	Apr	17	9	16	20.61	18.16	n
9	3046	7.07	May	4	15	59	35.01	53.85	s
10	3050	7.34	May	4	16	51	47.35	53.59	s
11	3304	6.37	May	6	17	18	27.33	34.49	s
12	882	5.02	May	15	9	25	25.75	8.19	n
13	1701	5.06	May	21	9	9	12.42	69.67	n
14	3243	7.44	Jun	2	13	57	31.39	61.50	s
15	3506	6.27	Jun	4	19	21	27.10	40.42	n
16	66	6.78	Jun	5	17	24	44.73	31.40	n
17	192	5.28	Jun	6	17	34	37.30	22.32	n
18	3478	6.51	Jul	1	21	39	1.91	65.60	n
19	505	7.02	Jul	6	17	51	39.10	17.88	n
20	761	6.66	Aug	4	19	38	46.34	20.95	n
21	1813	6.02	Aug	12	7	54	56.33	17.16	n
22	2301	6.75	Aug	16	8	22	42.26	58.37	n
23	2322	4.29	Aug	16	13	21	12.43	59.74	s
24	2834	5.01	Sep	16	10	58	5.16	71.96	s
25	2836	5.56	Sep	16	10	59	54.07	72.07	n
26	633	5.39	Sep	27	13	59	4.08	72.97	n
27	789	6.89	Sep	28	14	39	51.06	62.70	n
28	1365	6.09	Oct	29	16	40	6.93	43.43	n
29	1734	4.57	Nov	1	18	5	28.36	12.70	n
30	2719	5.76	Nov	9	9	39	25.68	20.22	s
31	3265	6.60	Nov	13	12	43	25.99	57.81	s
32	2834	5.01	Dec	7	12	19	40.21	8.68	s
33	3092	6.15	Dec	9	12	28	9.78	22.48	s

VNG TIME SIGNAL SERVICE

The purpose of the service is to provide accurate time signals and standard frequencies for use throughout Australia by organizations making seismic and other scientific measurements, and by surveying and exploration teams throughout the continent.

The broadcast times and frequencies are given on page 22 for those using this service to time grazes.

The time signals are maintained to within 0.1 millisecond of Co-ordinated Universal Time (UTC). Occasional step adjustments of precisely one second as determined by the Bureau International de l'Heure are made to keep the time signals within about 0.9 second of astronomical time (UT).

The time codes for these broadcasts is as listed below:

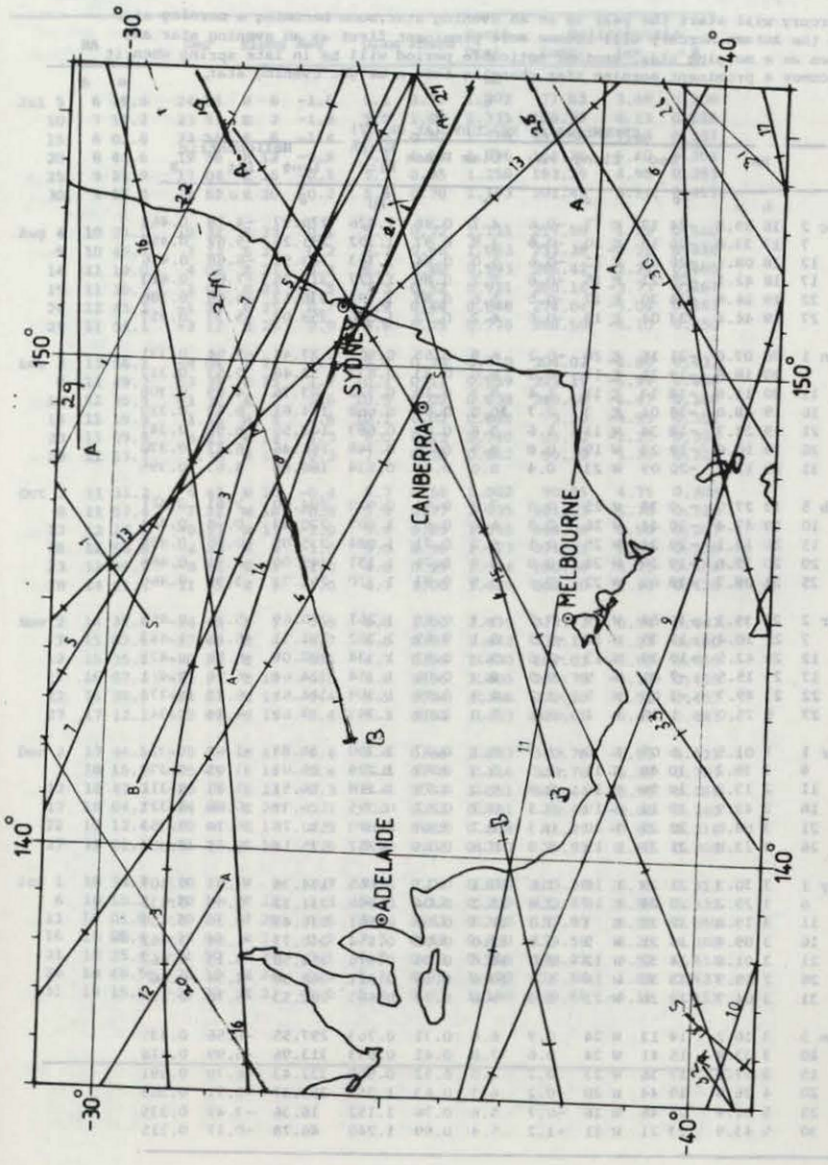
Seconds markers are normally 50 milliseconds long.

Seconds marker 59 is omitted. Minute marker (seconds marker 60) is 500 milliseconds long.

Station identification announcement (in English) is given during the 15th, 30th, 45th and 60th minutes of the hour without interuption to the time signals.

During the 5th, 10th, 15th, etc. minutes, seconds markers 50 to 58 are 5 milliseconds long.

During normal minutes, seconds markers 55 to 58 are 5 milliseconds long.



MERCURY

Mercury will start the year as an an evening star,soon becoming a morning star In the Autumn Mercury will become more prominent first as an evening star and then as a morning star. another noticable period will be in late spring when it becomes a prominent morning star,changing into a bright evening star

EPHEMERIS OF MERCURY (At 0h UT)

	RA	Dec	Elong	Mag	Diam	Phase	Earth Dist	Heliocentric Long	Heliocentric Lat	Heliocentric R
	h m	° ′			″		AU	°	°	
Dec 2	16 59.8	-24 17	E 7	-0.6	4.7	0.98	1.426	270.97	-4.78	0.463
7	17 33.8	-25 13	E 10	-0.6	4.8	0.97	1.392	285.26	-5.89	0.453
12	18 08.1	-25 35	E 12	-0.6	5.0	0.94	1.343	300.51	-6.68	0.436
17	18 42.1	-25 21	E 15	-0.6	5.2	0.89	1.277	317.25	-7.00	0.413
22	19 14.8	-24 30	E 17	-0.5	5.6	0.83	1.191	336.17	-6.66	0.386
27	19 44.4	-23 04	E 19	-0.5	6.2	0.72	1.086	358.02	-5.39	0.357
Jan 1	20 07.6	-21 15	E 20	-0.2	6.9	0.55	0.962	23.44	-2.94	0.331
6	20 18.8	-19 25	E 17	0.3	8.0	0.33	0.832	52.46	0.53	0.312
11	20 11.8	-18 13	E 11	1.4	9.3	0.10	0.722	83.76	4.09	0.308
16	19 48.0	-18 01	E 3	2.7	10.0	0.01	0.668	114.61	6.43	0.319
21	19 22.7	-18 34	W 11	1.6	9.8	0.09	0.683	142.50	6.98	0.341
26	19 10.6	-19 23	W 19	0.8	8.9	0.25	0.748	166.46	6.17	0.370
31	19 13.4	-20 09	W 23	0.4	8.0	0.41	0.834	186.88	4.63	0.398
Feb 5	19 27.0	-20 38	W 25	0.3	7.2	0.54	0.923	204.60	2.81	0.423
10	19 47.4	-20 44	W 26	0.2	6.6	0.63	1.007	220.43	0.94	0.444
15	20 12.1	-20 21	W 25	0.1	6.2	0.71	1.084	235.05	-0.85	0.458
20	20 39.6	-19 27	W 24	0.0	5.8	0.76	1.151	249.00	-2.51	0.466
25	21 08.7	-18 02	W 22	-0.0	5.5	0.81	1.210	262.73	-3.99	0.466
Mar 2	21 39.1	-16 04	W 19	-0.2	5.3	0.85	1.261	276.69	-5.26	0.460
7	22 10.4	-13 35	W 16	-0.3	5.1	0.89	1.302	291.31	-6.26	0.447
12	22 42.5	-10 33	W 13	-0.6	5.0	0.93	1.334	307.09	-6.88	0.427
17	23 15.5	-7 01	W 9	-0.9	4.9	0.96	1.354	324.64	-6.96	0.403
22	23 49.7	-3 00	W 5	-1.2	4.9	0.99	1.358	344.65	-6.27	0.374
27	0 25.0	1 26	E 1	-1.6	5.0	1.00	1.343	7.69	-4.54	0.347
Apr 1	1 01.5	6 07	E 6	-1.5	5.1	0.97	1.300	34.83	-1.62	0.322
6	1 38.2	10 46	E 11	-1.3	5.5	0.89	1.224	65.03	3.05	0.309
11	2 13.2	14 56	E 16	-0.8	6.0	0.75	1.118	96.51	5.25	0.311
16	2 43.9	18 14	E 19	-0.3	6.7	0.57	0.995	126.39	6.86	0.327
21	3 08.0	20 27	E 20	0.3	7.7	0.40	0.870	152.76	6.78	0.352
26	3 23.8	21 31	E 19	1.0	8.8	0.25	0.757	175.14	5.60	0.381
May 1	3 30.3	21 29	E 16	1.6	10.1	0.13	0.665	194.36	3.91	0.409
6	3 28.2	20 24	E 10	2.4	11.2	0.04	0.598	211.22	2.05	0.432
11	3 19.8	18 32	E 3	3.3	11.9	0.00	0.561	226.48	0.20	0.450
16	3 09.4	16 21	W 5	3.0	12.0	0.01	0.554	240.77	-1.54	0.462
21	3 01.8	14 32	W 12	2.3	11.6	0.06	0.576	254.58	-3.13	0.467
26	2 59.9	13 30	W 18	1.7	10.8	0.13	0.621	268.36	-4.54	0.467
31	3 04.7	13 26	W 22	1.3	9.8	0.22	0.685	282.53	-5.70	0.455
Jun 5	3 16.2	14 13	W 24	0.9	8.8	0.31	0.763	297.55	-6.56	0.439
10	3 33.8	15 41	W 24	0.6	7.8	0.41	0.853	313.96	-6.99	0.418
15	3 57.3	17 36	W 23	0.2	7.0	0.52	0.950	332.43	-6.79	0.391
20	4 26.8	19 44	W 20	-0.2	6.3	0.63	1.052	353.67	-5.71	0.363
25	5 02.4	21 46	W 16	-0.7	5.8	0.76	1.152	18.36	-3.49	0.335
30	5 43.9	23 21	W 11	-1.2	5.4	0.89	1.240	46.78	-0.17	0.315

MERCURY (CONT)

	RA	Dec	Elong	Mag	Diam	Phase	Earth Dist	Heliocentric Long	Heliocentric Lat	Heliocentric R
	h m	° ′			″		AU	°	°	
Jul 5	6 29.8	24 05	W 6	-1.6	5.1	0.97	1.302	77.83	3.48	0.308
10	7 17.2	23 43	E 2	-1.8	5.0	1.00	1.331	108.99	6.13	0.316
15	8 02.8	22 15	E 6	-1.4	5.0	0.97	1.326	137.56	7.00	0.337
20	8 44.6	19 56	E 12	-0.9	5.2	0.91	1.296	162.26	6.40	0.364
25	9 21.9	17 04	E 16	-0.5	5.3	0.85	1.250	183.29	4.95	0.393
30	9 55.0	13 52	E 20	-0.2	5.6	0.78	1.193	201.45	3.16	0.419
Aug 4	10 24.2	10 32	E 23	0.1	5.9	0.72	1.131	217.58	1.29	0.440
9	10 49.8	7 12	E 25	0.2	6.3	0.66	1.063	232.38	-0.52	0.456
14	11 12.0	4 02	E 27	0.4	6.7	0.60	0.993	246.42	-2.21	0.465
19	11 30.7	1 07	E 27	0.5	7.3	0.52	0.921	260.16	-3.73	0.467
24	11 45.1	-1 22	E 27	0.7	7.9	0.44	0.848	274.04	-5.04	0.461
29	11 54.1	-3 12	E 25	0.9	8.6	0.35	0.776	288.50	-6.10	0.450
Sep 3	11 56.1	-4 04	E 21	1.2	9.4	0.23	0.710	304.02	-6.80	0.431
8	11 49.7	-3 35	E 15	1.7	10.1	0.11	0.659	321.19	-6.99	0.408
13	11 35.4	-1 32	E 7	2.6	10.5	0.02	0.638	340.68	-6.47	0.380
18	11 18.9	1.35	W 5	2.6	10.1	0.02	0.662	3.26	-4.95	0.351
23	11 09.4	4.21	W 13	1.3	9.0	0.13	0.740	29.50	-2.25	0.326
28	11 13.7	5.30	W 17	0.3	7.7	0.35	0.862	59.19	1.35	0.310
Oct 3	11 31.2	4 42	W 18	-0.4	6.7	0.58	1.002	90.65	4.75	0.309
8	11 57.4	2 21	W 16	-0.8	5.9	0.77	1.135	121.03	6.70	0.323
13	12 27.5	-0.53	W 13	-1.0	5.4	0.89	1.245	148.08	6.90	0.347
18	12 58.8	-4 28	W 9	-1.0	5.0	0.96	1.327	171.21	5.88	0.376
23	12 30.1	-8 06	W 5	-1.0	4.8	0.99	1.384	190.96	4.25	0.404
28	14 01.3	-11 35	W 2	-1.0	4.7	1.00	1.420	208.20	2.40	0.428
Nov 2	14 32.4	-14 48	E 1	-0.9	4.6	1.00	1.439	223.72	0.54	0.447
7	15 03.6	-17 42	E 4	-0.7	4.6	0.99	1.442	238.15	-1.22	0.460
12	15 35.2	-20 14	E 7	-0.6	4.7	0.98	1.430	252.01	-2.85	0.466
17	16 07.1	-22 21	E 10	-0.5	4.8	0.96	1.405	265.76	-4.29	0.465
22	16 39.5	-24 01	E 13	-0.4	4.9	0.94	1.366	279.82	-5.51	0.457
27	17 12.1	-25 09	E 15	-0.4	5.1	0.91	1.313	294.65	-6.43	0.443
Dec 2	17 44.5	-25 45	E 17	-0.4	5.4	0.86	1.243	310.76	-6.95	0.422
7	18 15.5	-25 45	E 19	-0.4	5.8	0.78	1.156	328.78	-6.89	0.397
12	18 43.3	-25 10	E 21	-0.3	6.4	0.67	1.051	349.44	-5.99	0.368
17	19 04.2	-24 05	E 20	-0.1	7.2	0.51	0.931	13.46	-4.00	0.340
22	19 12.4	-22 44	E 17	0.5	8.3	0.29	0.808	41.20	-0.85	0.318
27	19 01.5	-21 27	E 10	1.6	9.4	0.08	0.710	71.91	2.83	0.308
Jan 1	18 34.7	-20 32	W 3	2.7	9.9	0.01	0.673	103.28	5.76	0.313
6	18 10.2	-20 10	W 13	1.3	9.4	0.12	0.709	132.49	6.97	0.332
11	18 01.6	-20 27	W 20	0.6	8.4	0.31	0.792	157.93	6.59	0.359
16	18 08.4	-21 08	W 23	0.2	7.5	0.48	0.890	179.59	5.26	0.388
21	18 25.4	-21 50	W 24	0.1	6.8	0.61	0.986	198.22	3.51	0.414
26	18 48.5	-22 18	W 24	0.0	6.2	0.70	1.073	214.68	1.64	0.437
31	19 15.5	-22 23	W 23	-0.0	5.8	0.77	1.150	229.68	-0.19	0.453

VENUS

Venus is a bright evening star for the first half of the year. It moves into conjunction at the end of Winter,then becomes a bright morning star towards the end of the year.

EPHEMERIS OF VENUS (At 0h UT)

	RA	Dec	Elong	Mag	Diam	Phase	Earth Dist	Heliocentric Long	Heliocentric Lat	Heliocentric R
	h m	° '			"		AU			
Dec 7	17 28.0	-23 40	E 8	-3.4	10.0	0.99	1.689	271.71	-1.00	0.727
17	18 22.9	-24 09	E 11	-3.4	10.1	0.98	1.673	289.52	-1.85	0.728
27	19 17.7	-23 22	E 13	-3.4	10.2	0.98	1.653	305.33	-2.56	0.728
Jan 6	20 11.4	-21 25	E 15	-3.3	10.3	0.97	1.629	321.15	-3.07	0.728
16	21 03.1	-18 25	E 18	-3.3	10.5	0.96	1.601	336.99	-3.35	0.728
26	21 52.7	-14 32	E 20	-3.3	10.7	0.94	1.570	352.86	-3.37	0.727
Feb 5	22 40.2	-10 01	E 22	-3.3	11.0	0.93	1.535	8.77	-3.14	0.726
15	23 26.2	-5 03	E 25	-3.4	11.2	0.91	1.496	24.71	-2.67	0.725
25	0 11.1	0 08	E 27	-3.4	11.6	0.89	1.453	40.70	-1.99	0.723
Mar 7	0 55.8	5 19	E 29	-3.4	12.0	0.87	1.405	56.74	-1.15	0.722
17	1 40.7	10 20	E 31	-3.4	12.4	0.85	1.354	72.82	-0.22	0.721
27	2 26.6	14 56	E 33	-3.4	13.0	0.82	1.298	88.95	0.73	0.720
Apr 6	3 13.8	18 58	E 36	-3.5	13.6	0.79	1.237	105.14	1.63	0.719
16	4 02.5	22 12	E 38	-3.5	14.3	0.76	1.173	121.36	2.39	0.718
26	4 52.4	24 29	E 39	-3.6	15.2	0.73	1.104	137.60	2.97	0.718
May 6	5 42.7	25 41	E 41	-3.6	16.3	0.69	1.032	153.86	3.31	0.719
16	6 32.5	25 47	E 43	-3.7	17.6	0.65	0.956	170.10	3.39	0.719
26	7 20.5	24 48	E 44	-3.8	19.2	0.60	0.878	186.29	3.19	0.720
Jun 5	8 05.6	22 51	E 45	-3.8	21.1	0.56	0.798	202.43	2.75	0.722
15	8 46.9	20 07	E 45	-3.9	23.5	0.50	0.717	218.50	2.09	0.723
25	9 23.5	16 50	E 45	-4.0	26.4	0.44	0.636	234.49	1.28	0.724
Jul 5	9 54.5	13 13	E 44	-4.1	30.2	0.38	0.556	250.41	0.36	0.726
15	10 18.7	9 34	E 41	-4.2	35.1	0.30	0.480	266.27	-0.57	0.727
25	10 33.9	6 14	E 36	-4.2	41.1	0.22	0.409	282.10	-1.47	0.728
Aug 4	10 37.2	3 40	E 29	-4.0	48.1	0.13	0.349	297.91	-2.25	0.728
14	10 26.6	2 27	E 18	-3.7	54.9	0.05	0.306	313.72	-2.85	0.728
24	10 04.9	2 59	E 8	-3.2	58.5	0.01	0.287	329.55	-3.25	0.728
Sep 3	9 43.1	4 53	W 16	-3.6	56.6	0.04	0.297	345.41	-3.39	0.727
13	9 33.2	6 57	W 27	-4.0	50.6	0.11	0.333	1.29	-3.28	0.726
23	9 38.7	8 16	W 36	-4.2	43.6	0.20	0.386	17.22	-2.92	0.725
Oct 3	9 56.9	8 31	W 41	-4.3	37.4	0.29	0.450	33.19	-2.33	0.724
13	10 23.9	7 41	W 44	-4.2	32.3	0.37	0.520	49.20	-1.56	0.723
23	10 56.6	5 53	W 46	-4.1	28.3	0.43	0.594	65.26	-0.66	0.721
Nov 2	11 32.9	3 16	W 47	-4.1	25.1	0.49	0.669	81.37	0.29	0.720
12	12 11.7	0 01	W 46	-4.0	22.6	0.54	0.744	97.53	1.22	0.719
22	12 52.3	-3 39	W 46	-3.9	20.5	0.59	0.819	113.74	2.05	0.719
Dec 2	13 34.6	-7 30	W 45	-3.8	18.8	0.63	0.892	129.97	2.73	0.718
12	14 18.7	-11 21	W 43	-3.7	17.4	0.67	0.964	146.23	3.18	0.719
22	15 04.7	-14 55	W 42	-3.7	16.3	0.71	1.034	162.48	3.39	0.719
Jan 1	15 52.8	-18 01	W 40	-3.6	15.3	0.74	1.102	178.69	3.32	0.720
11	16 43.0	-20 24	W 38	-3.5	14.4	0.77	1.167	194.86	2.99	0.721
21	17 34.8	-21 53	W 36	-3.5	13.7	0.80	1.229	210.96	2.43	0.722
31	18 27.7	-22 21	W 34	-3.4	13.1	0.83	1.289	226.99	1.68	0.724

MARS

Mars will be an evening object early in the year,but will move into the glare of the Sun during the Winter. Best viewing will be late in the year when it will be a morning object.

EPHEMERIS OF MARS (At 0h UT)

	RA	Dec	Elong	Mag	Diam	Phase	Pole PA	Pole Tilt	Earth Dist	Heliocentric Long	Heliocentric Lat	Heliocentric R
	h m	° '			"		°	°	AU	°	°	
Nov27	19 26.3	-23 20	E 45	1.2	5.0	0.93	15	-10	1.89	320.18	-1.85	1.386
Dec 7	19 59.3	-21 57	E 45	1.3	4.8	0.94	11	-13	1.93	326.51	-1.84	1.383
17	20 31.8	-20 11	E 41	1.3	4.7	0.94	6	-16	1.97	332.85	-1.80	1.382
27	21 03.6	-18 02	E 38	1.3	4.6	0.95	1	-19	2.01	339.20	-1.74	1.382
Jan 6	21 34.8	-15 35	E 36	1.3	4.6	0.95	-4	-21	2.05	345.55	-1.66	1.383
16	22 05.2	-12 52	E 34	1.4	4.5	0.96	-9	-23	2.10	351.87	-1.56	1.386
26	22 35.0	-9 57	E 31	1.4	4.4	0.97	-14	-24	2.14	358.16	-1.44	1.390
Feb 5	23 04.1	-6 53	E 29	1.4	4.3	0.97	-19	-25	2.18	4.40	-1.31	1.396
15	23 32.7	-3 45	E 27	1.4	4.2	0.97	-23	-26	2.22	10.59	-1.16	1.403
25	0 01.0	-0 34	E 24	1.5	4.2	0.98	-27	-25	2.25	16.71	-1.00	1.411
Mar 7	0 29.1	2 35	E 22	1.5	4.1	0.98	-31	-25	2.29	22.75	-0.83	1.420
17	0 57.0	5 39	E 19	1.5	4.0	0.99	-33	-24	2.33	28.72	-0.65	1.430
27	1 25.0	8 37	E 17	1.5	4.0	0.99	-36	-22	2.36	34.59	-0.47	1.441
Apr 6	1 53.1	11 25	E 15	1.6	3.9	0.99	-37	-20	2.40	40.38	-0.29	1.452
16	2 21.5	14 01	E 12	1.6	3.9	0.99	-38	-18	2.43	46.07	-0.11	1.464
26	2 50.1	16 23	E 10	1.6	3.8	1.00	-38	-16	2.46	51.67	0.07	1.477
May 6	3 19.1	18 28	E 7	1.6	3.8	1.00	-38	-13	2 48	57.18	0.25	1.490
16	3 48.4	20 16	E 5	1.6	3.7	1.00	-37	-10	2.51	62.59	0.42	1.503
26	4 18.0	21 44	E 2	1.6	3.7	1.00	-35	-7	2.53	67.90	0.59	1.516
Jun 5	4 47.7	22 51	W 1	1.7	3.7	1.00	-33	-4	2.54	73.13	0.74	1.529
15	5 17.6	23 37	W 3	1.7	3.7	1.00	-30	-2	2.55	78.27	0.89	1.542
25	5 47.3	24 02	W 6	1.8	3.7	1.00	-27	0	2.56	83.32	1.03	1.554
Jul 5	6 16.9	24 06	W 9	1.8	3.7	1.00	-24	4	2.56	88.29	1.16	1.567
15	6 46.1	23 49	W 11	1.8	3.7	1.00	-21	7	2.56	93.19	1.28	1.578
25	7 14.8	23 12	W 14	1.9	3.7	0.99	-17	10	2.55	98.02	1.39	1.590
Aug 4	7 43.0	22 17	W 17	1.9	3.7	0.99	-13	12	2.54	102.78	1.48	1.600
14	8 10.5	21 05	W 20	1.9	3.7	0.99	-9	15	2.52	107.48	1.57	1.611
24	8 37.2	19 39	W 24	1.9	3.8	0.98	-5	17	2.49	112.13	1.64	1.620
Sep 3	9 03.3	17 59	W 27	2.0	3.8	0.98	-1	19	2.46	116.72	1.71	1.629
13	9 28.6	16 09	W 30	2.0	3.9	0.98	3	21	2.42	121.27	1.76	1.636
23	9 53.3	14 09	W 34	2.0	3.9	0.97	7	22	2.38	125.77	1.80	1.643
Oct 3	10 17.3	12 01	W 37	1.9	4.0	0.96	11	23	2.33	130.24	1.83	1.649
13	10 40.8	9 48	W 41	1.9	4.1	0.96	15	24	2.27	134.69	1.84	1.655
23	11 03.8	7 31	W 45	1.9	4.2	0.95	19	25	2.21	139.10	1.85	1.659
Nov 2	11 26.3	5 12	W 49	1.9	4.4	0.95	22	25	2.14	143.50	1.85	1.662
12	11 48.4	2 52	W 53	1.8	4.5	0.94	25	25	2.06	147.88	1.83	1.664
22	12 10.1	0 33	W 57	1.7	4.7	0.93	28	24	1.98	152.25	1.80	1.666
Dec 2	12 31.5	-1.43	W 61	1.7	4.9	0.93	31	24	1.90	156.62	1.77	1.666
12	12 52.6	-3 55	W 66	1.6	5.2	0.92	33	23	1.81	160.98	1.72	1.665
22	13 13.4	-6 02	W 70	1.5	5.5	0.92	35	22	1.71	165.36	1.66	1.664
Jan 1	13 33.8	-8 01	W 75	1.4	5.8	0.91	36	20	1.62	169.74	1.60	1.661
11	13 53.7	-9 53	W 80	1.2	6.2	0.91	37	19	1.52	174.14	1.52	1.657
21	14 13.1	-11 36	W 85	1.1	6.6	0.90	38	18	1.41	178.57	1.44	1.653
31	14 31.6	-12 08	W 91	0.9	7.1	0.90	38	16	1.31	183.02	1.34	1.647

MARS (CONT)

LONGITUDE OF CENTRAL MERIDIAN (At 0h(UT)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	296.4	347.9	68.6	120.8	185.3	242.4	310.5	9.2	67.6	135.0	192.3	260.1
2	286.4	337.9	58.7	110.9	175.5	232.6	300.8	359.5	57.8	125.2	182.6	250.4
3	276.5	328.0	48.7	101.0	165.7	222.9	291.0	349.8	48.1	115.4	172.8	240.7
4	266.6	318.0	38.8	91.1	155.9	213.1	281.3	340.1	38.3	105.7	163.1	231.0
5	256.7	308.0	28.8	81.2	146.1	203.4	271.6	330.3	28.6	95.9	153.3	221.3
6	246.7	298.0	18.8	71.4	136.3	193.6	261.9	320.6	18.8	86.2	143.6	211.6
7	236.8	288.1	8.9	61.5	126.5	183.9	252.2	310.9	9.1	76.4	133.8	201.9
8	226.9	278.1	358.9	51.6	116.7	174.2	242.4	301.2	359.3	66.6	124.0	192.2
9	216.9	268.1	349.0	41.7	106.9	164.4	232.7	291.4	349.6	56.9	114.3	182.5
10	207.0	258.1	339.0	31.9	97.2	154.7	223.0	281.7	339.8	47.1	104.5	172.8
11	197.1	248.2	329.1	22.0	87.4	145.0	213.3	272.0	330.1	37.3	94.8	163.1
12	187.1	238.2	319.1	12.1	77.6	135.2	203.6	262.3	320.3	27.6	85.1	153.4
13	177.2	228.2	309.2	2.3	67.8	125.5	193.9	252.5	310.6	17.8	75.3	143.7
14	167.2	218.2	299.3	352.4	58.0	115.8	184.2	242.8	300.8	8.0	65.6	134.0
15	157.3	208.2	289.3	342.6	48.3	106.0	174.4	233.1	291.1	358.3	55.8	124.3
16	147.3	198.3	279.4	332.7	38.5	96.3	164.7	223.3	281.3	348.5	46.1	114.6
17	137.4	188.3	269.5	322.9	28.7	86.6	155.0	213.6	271.6	338.7	36.3	104.9
18	127.4	178.3	259.5	313.0	18.9	76.9	145.3	203.9	261.8	329.0	26.6	95.3
19	117.5	168.3	249.6	303.2	9.2	67.1	135.6	194.1	252.1	319.2	16.9	85.6
20	107.5	158.4	239.7	293.4	359.4	57.4	125.9	184.4	242.3	309.5	7.1	75.9
21	97.6	148.4	229.7	283.5	349.6	47.7	116.1	174.7	232.6	299.7	357.4	66.2
22	87.6	138.4	219.8	273.7	339.9	38.0	106.4	164.9	222.8	289.9	347.7	56.6
23	77.6	128.4	209.9	263.9	330.1	28.2	96.7	155.2	213.0	280.2	337.9	46.9
24	67.7	118.5	200.0	254.0	320.4	18.5	87.0	145.5	203.3	270.4	328.2	37.2
25	57.5	108.5	190.1	244.2	310.6	8.8	77.3	135.7	193.5	260.6	318.5	27.6
26	47.7	98.5	180.2	234.4	300.8	359.1	67.5	126.0	183.8	250.9	308.7	17.9
27	37.8	88.6	170.3	224.6	291.1	349.3	57.8	116.3	174.0	241.1	299.0	8.3
28	27.8	78.6	160.4	214.8	281.3	339.6	48.1	106.5	164.3	231.4	289.3	358.6
29	17.8		150.5	204.9	271.6	339.9	38.4	96.8	154.5	221.6	279.6	349.0
30	7.9		140.6	195.1	261.8	320.2	28.7	87.0	144.7	211.8	269.8	339.3
31	357.9		130.7		252.1		18.9	77.3		202.1		329.7

CHANGES OF LONGITUDE IN INTERVALS OF TIME

h	°	h	°	m	°	m	°
1	14·6	7	102·3	5	1·2	35	8·5
2	29·2	8	116·9	10	2·4	40	9·7
3	43·8	9	131·5	15	3·7	45	11·0
4	58·5	10	146·1	20	4·9	50	12·2
5	73·1	11	160·7	25	6·1	55	13·4
6	87·7	12	175·4	30	7·3	60	14·6

JUPITER

Jupiter,at the start of the year,will be visible in the eastern sky leading the Sun over the horizon. Viewing will be at its best during the winter months. Towards the end of the year,Jupiter will approach the Sun,till it finally sets just on sunset.

EPHEMERIS OF JUPITER (At 0h UT)

	RA	Dec	Elong	Mag	Diameter Equat	Diameter Polar	Dist	Heliocentric Long	Heliocentric Lat	R
	h m	o '	°		"	"	AU	°	°	
Nov27	15 26.7	-17 56	W 11	-1.2	30.9	28.9	6.37	231.92	0.98	5.399
Dec 7	15 35.6	-18 28	W 19	-1.3	31.2	29.1	6.32	232.70	0.96	5.397
17	15 44.4	-18 57	W 27	-1.3	31.5	29.4	6.26	233.47	0.95	5.395
27	15 52.8	-19 23	W 35	-1.3	31.9	29.8	6.17	234.24	0.94	5.392
Jan 6	16 01.0	-19 47	W 43	-1.4	32.5	30.3	6.07	235.01	0.93	5.390
16	16 08.6	-20 08	W 51	-1.4	33.1	30.9	5.95	235.79	0.92	5.388
26	16 15.6	-20 26	W 60	-1.5	33.9	31.6	5.81	236.56	0.90	5.385
Feb 5	16 21.9	-20 40	W 68	-1.5	34.8	32.4	5.67	237.34	0.89	5.383
15	16 27.3	-20 52	W 77	-1.6	35.7	33.4	5.51	238.11	0.88	5.381
25	16 31.8	-21 02	W 86	-1.6	36.8	34.4	5.35	238.89	0.86	5.378
Mar 7	16 35.1	-21 07	W 96	-1.7	38.0	35.4	5.19	239.66	0.85	5.376
17	16 37.2	-21 10	W 105	-1.8	39.2	36.6	5.03	240.44	0.84	5.373
27	16 38.0	-21 11	W 115	-1.8	40.4	37.7	4.87	241.22	0.82	5.370
Apr 6	16 37.4	-21 09	W 125	-1.9	41.6	38.8	4.73	242.00	0.81	5.368
16	16 35.6	-21 05	W 135	-2.0	42.7	39.9	4.61	242.78	0.80	5.365
26	16 32.6	-20 59	W 146	-2.0	43.7	40.8	4.50	243.56	0.78	5.362
May 6	16 28.5	-20 50	W 156	-2.1	44.5	41.6	4.42	244.34	0.77	5.360
16	16 23.7	-20 40	W 167	-2.1	45.1	42.1	4.37	245.13	0.75	5.357
26	16 18.4	-20 28	W 178	-2.1	45.4	42.3	4.34	245.91	0.74	5.354
Jun 5	16 13.1	-20 16	E 171	-2.1	45.3	42.3	4.35	246.69	0.72	5.351
15	16 08.0	-20 04	E 160	-2.1	45.0	42.0	4.38	247.48	0.71	5.349
25	16 03.6	-19 54	E 150	-2.1	44.3	41.4	4.44	248.26	0.69	5.346
Jul 5	16 00.1	-19 46	E 140	-2.0	43.5	40.6	4.53	249.05	0.68	5.343
15	15 57.5	-19 41	E 129	-2.0	42.5	39.6	4.64	249.84	0.66	5.340
25	15 56.5	-19 40	E 120	-1.9	41.4	38.6	4.76	250.63	0.65	5.337
Aug 4	15 56.5	-19 43	E 110	-1.8	40.2	37.5	4.90	251.41	0.63	5.334
14	15 57.9	-19 49	E 101	-1.8	39.0	36.4	5.05	252.20	0.62	5.331
24	16 00.4	-19 58	E 92	-1.7	37.9	35.4	5.20	253.00	0.60	5.328
Sep 3	16 04.1	-20 11	E 83	-1.7	36.8	34.3	5.35	253.79	0.58	5.325
13	16 08.8	-20 26	E 74	-1.6	35.8	33.4	5.50	254.58	0.57	5.322
23	16 14.5	-20 42	E 66	-1.5	34.9	32.6	5.65	255.37	0.55	5.318
Oct 3	16 21.1	-21 00	E 58	-1.5	34.1	31.8	5.78	256.17	0.53	5.315
13	16 28.4	-21 18	E 50	-1.4	33.4	31.1	5.90	256.96	0.52	5.312
23	16 36.3	-21 36	E 42	-1.4	32.8	30.6	6.01	257.76	0.50	5.309
Nov 2	16 44.9	-21 54	E 34	-1.4	32.3	30.1	6.10	258.56	0.48	5.306
12	16 53.9	-22 10	E 26	-1.4	31.9	29.8	6.18	259.36	0.47	5.302
22	17 03.2	-22 25	E 18	-1.3	31.6	29.5	6.23	260.16	0.45	5.299
Dec 2	17 12.8	-22 38	E 10	-1.3	31.4	29.3	6.26	260.96	0.43	5.296
12	17 22.6	-22 49	E 2	-1.3	31.4	29.3	6.28	261.76	0.42	5.293
22	17 32.4	-22 57	W 6	-1.3	31.4	29.3	6.27	262.56	0.40	5.289
Jan 1	17 42.2	-23 03	W 14	-1.3	31.6	29.5	6.24	263.36	0.38	5.286
11	17 51.9	-23 07	W 22	-1.4	31.9	29.7	6.18	264.17	0.36	5.286
21	18 01.3	-23 09	W 30	-1.4	32.2	30.1	6.11	264.97	0.35	5.279
31	18 10.3	-23 08	W 38	-1.4	32.7	30.5	6.02	265.78	0.33	5.276

JUPITER (CONT)

This system applies between the south component of the North Equatorial Belt and the north componemt of the South Equatorial Belt.

LONGITUDE OF CENTRAL MERIDIAN OF JUPITER . SYSTEM I (At oh UT)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	133.5	345.3	85.5	301.7	1.9	220.9	280.3	134.2	345.0	36.0	243.7	293.5
2	291.3	143.1	243.4	99.7	159.9	18.9	78.2	292.0	142.7	193.7	41.3	91.1
3	89.1	300.9	41.3	257.6	317.9	176.9	236.1	89.8	300.5	351.4	199.0	248.8
4	246.8	98.8	199.3	55.6	116.0	335.0	34.0	247.6	98.2	149.1	356.7	46.5
5	44.6	256.6	357.2	213.6	274.0	133.0	191.9	45.4	255.9	306.7	154.3	204.1
6	202.4	54.4	155.1	11.6	72.0	291.0	349.8	203.2	53.6	104.4	312.0	1.8
7	0.1	212.3	313.0	169.6	230.1	89.0	147.8	1.0	211.3	262.1	109.6	159.5
8	157.9	10.1	110.9	327.6	28.1	247.0	305.7	158.8	9.1	59.7	267.3	317.2
9	315.7	168.0	268.8	125.6	186.1	45.0	103.6	316.6	166.8	217.4	64.9	114.8
10	113.5	325.8	66.8	283.6	344.2	203.0	261.4	114.4	324.5	15.1	222.6	272.5
11	271.3	123.7	224.7	81.6	142.2	1.0	59.3	272.2	122.2	172.8	20.3	70.2
12	69.1	281.6	22.6	239.6	300.2	159.0	217.2	70.0	279.9	330.4	177.9	227.8
13	226.8	79.4	180.5	37.6	98.3	317.0	15.1	227.7	77.6	128.1	335.6	25.5
14	24.6	237.3	338.5	195.6	256.3	115.0	173.0	25.5	235.3	285.8	133.2	183.2
15	182.4	35.2	136.4	353.6	54.4	273.0	330.9	183.3	33.0	83.4	290.9	340.9
16	340.2	193.0	294.3	151.6	212.4	70.9	128.7	341.1	190.7	241.1	88.6	138.5
17	138.0	350.9	92.3	309.6	10.4	228.9	286.6	138.8	348.4	38.8	246.2	296.2
18	295.8	148.8	250.2	107.6	168.5	26.9	84.5	296.6	146.1	196.4	43.9	93.9
19	93.6	306.6	48.2	265.6	326.5	184.9	242.3	94.4	303.8	354.1	201.5	251.6
20	251.4	104.5	206.1	63.6	124.5	342.8	40.2	252.1	101.5	151.8	359.2	49.3
21	49.2	262.4	4.1	221.6	282.6	140.8	198.0	49.9	259.2	309.4	156.9	206.9
22	207.0	60.3	162.0	19.7	80.6	298.8	355.9	207.6	56.9	107.1	314.5	4.6
23	4.8	218.2	320.0	177.7	238.6	96.7	153.7	5.4	214.6	264.7	112.2	162.3
24	162.7	16.1	117.9	335.7	36.7	254.7	311.6	163.1	12.2	62.4	269.8	320.0
25	320.5	173.9	275.9	133.7	194.7	52.6	109.4	320.9	169.9	220.1	67.5	117.7
26	118.3	331.8	73.9	291.7	352.7	210.6	267.3	118.6	327.6	17.7	225.2	275.4
27	276.1	129.7	231.8	89.6	150.5	8.5	65.1	276.3	125.3	175.4	22.8	73.1
28	73.9	287.6	29.8	247.8	308.8	166.5	222.8	74.1	283.0	333.0	180.5	230.8
29	231.8		187.8	45.8	106.8	324.4	20.8	231.8	80.7	130.7	338.2	28.4
30	29.6		345.7	203.8	264.9	122.3	178.6	29.4	238.3	288.4	135.8	186.1
31	187.4		143.7		62.9		336.4	187.3		86.0		343.8

CHANGES OF LONGITUDE IN INTERVALS OF TIME

°	h	°	m	°	m	°	m	°
36·6	6	219·5	10	6·1	1	0·6	6	3·7
73·2	7	256·1	20	12·2	2	1·2	7	4·3
109·7	8	292·7	30	18·3	3	1·8	8	4·9
146·3	9	329·2	40	24·4	4	2·4	9	5·5
182·9	10	5·8	50	30·5	5	3·0	10	6·1

JUPITER (CONT)

This system applies above the south component of the North Equatorial Belt and below the north component of the South Equatorial Belt.

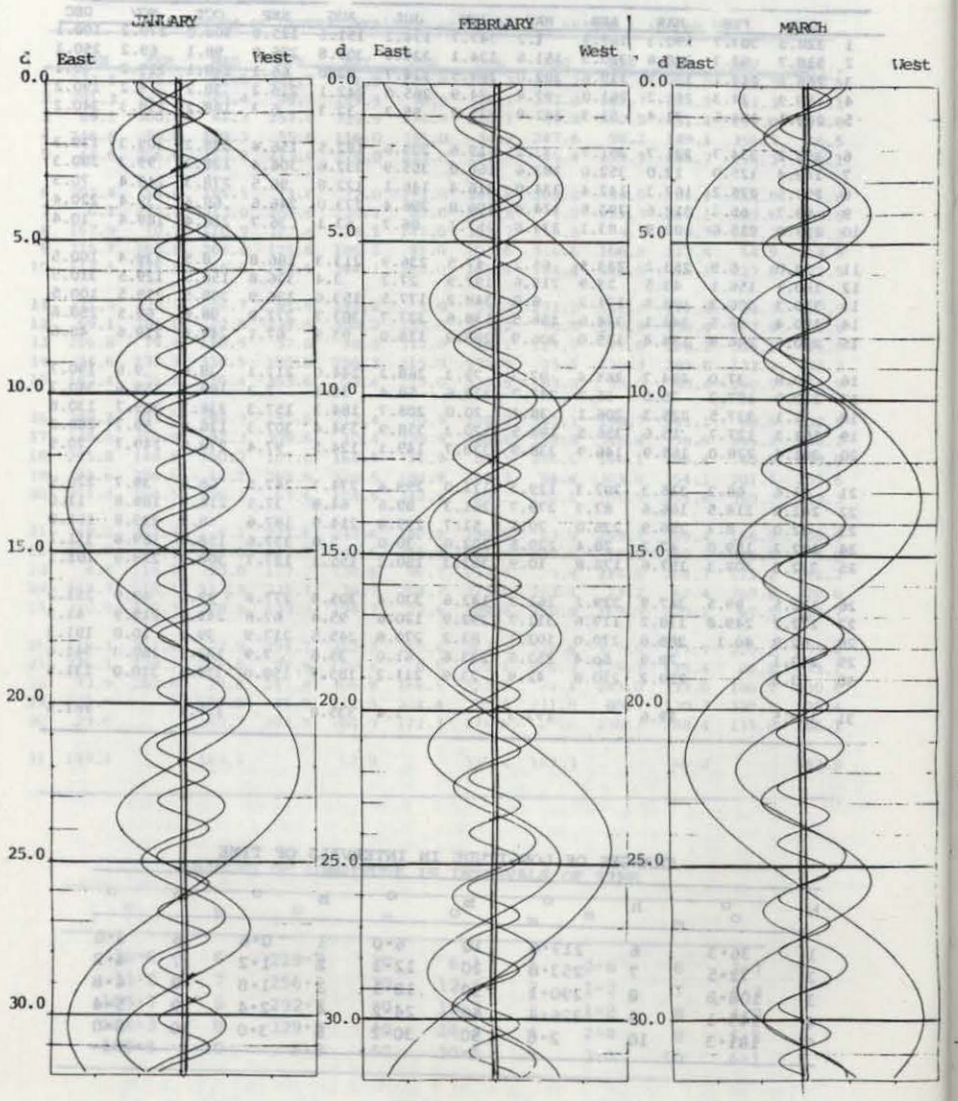
LONGITUDE OF CENTRAL MERIDIAN OF JUPITER . SYSTEM II (At Oh UT)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	328.5	303.7	190.3	169.9	1.2	343.7	174.2	151.6	125.9	308.0	279.2	100.1
2	118.7	93.3	340.6	320.3	151.6	134.1	324.4	301.8	276.0	98.1	69.2	250.1
3	268.8	244.1	130.9	110.6	302.0	284.5	114.7	92.0	66.1	248.1	219.2	40.1
4	58.9	34.3	281.2	261.0	92.4	74.9	265.0	242.1	216.2	38.2	9.2	190.2
5	209.1	184.5	71.4	51.3	242.8	225.2	55.3	32.3	6.3	188.2	159.3	340.2
6	359.2	334.7	221.7	201.7	33.2	15.6	205.6	182.5	156.4	338.2	309.3	130.3
7	149.4	125.0	12.0	352.0	183.6	166.0	355.9	332.6	306.4	128.3	99.3	280.3
8	299.5	275.2	162.3	142.4	334.0	316.4	146.1	122.8	96.5	278.3	249.4	70.3
9	89.7	65.4	312.6	292.8	124.4	106.8	296.4	273.0	246.6	68.4	39.4	220.4
10	239.8	215.6	102.9	83.1	274.8	257.1	86.7	63.1	36.7	218.4	189.4	10.4
11	30.0	5.9	253.2	233.5	65.2	47.5	236.9	213.3	186.8	8.5	339.4	160.5
12	180.1	156.1	43.5	23.9	215.6	197.9	27.2	3.4	336.8	158.5	129.5	310.5
13	330.3	306.3	193.8	174.2	6.0	348.2	177.5	153.6	126.9	308.5	279.5	100.5
14	120.4	96.5	344.1	324.6	156.5	138.6	327.7	303.7	277.0	98.6	69.5	250.6
15	270.6	246.8	134.4	115.0	306.9	288.9	118.0	93.9	67.1	248.6	219.6	40.6
16	60.8	37.0	284.7	265.4	97.3	79.3	268.2	244.0	217.1	38.6	9.6	190.7
17	210.9	187.3	75.0	55.7	247.7	229.6	58.4	34.1	7.2	188.7	159.6	340.7
18	1.1	337.5	225.3	206.1	38.1	20.0	208.7	184.3	157.3	338.7	309.7	130.8
19	151.3	127.7	15.6	356.5	188.5	170.3	358.9	334.4	307.3	128.8	99.7	280.8
20	301.4	278.0	165.9	146.9	338.9	320.7	149.1	124.5	97.4	278.8	249.7	70.9
21	91.6	68.2	316.3	297.3	129.3	111.0	299.4	274.7	247.5	68.8	39.7	220.9
22	241.8	218.5	106.6	87.7	279.7	261.3	89.6	64.8	37.5	218.9	189.8	11.0
23	32.0	8.7	256.9	238.0	70.1	51.7	239.8	214.9	187.6	8.9	339.8	161.0
24	182.2	159.0	47.2	28.4	220.5	202.0	30.0	5.0	337.6	158.9	129.8	311.1
25	332.3	309.3	197.6	178.8	10.9	352.3	180.2	155.1	127.7	308.9	279.9	101.1
26	122.5	99.5	347.9	329.2	161.3	142.6	330.4	305.3	277.8	99.0	69.9	251.2
27	272.7	249.8	138.2	119.6	311.7	292.9	120.6	95.4	67.8	249.0	219.9	41.3
28	62.9	40.1	288.6	270.0	102.1	83.2	270.8	245.5	217.9	39.0	10.0	191.3
29	213.1		78.9	60.4	252.5	233.6	61.0	35.6	7.9	189.1	160.0	341.4
30	3.3		229.2	210.8	42.9	23.9	211.2	185.7	158.0	339.1	310.0	131.5
31	153.5		19.6		193.3		1.4	335.8		129.1		281.5

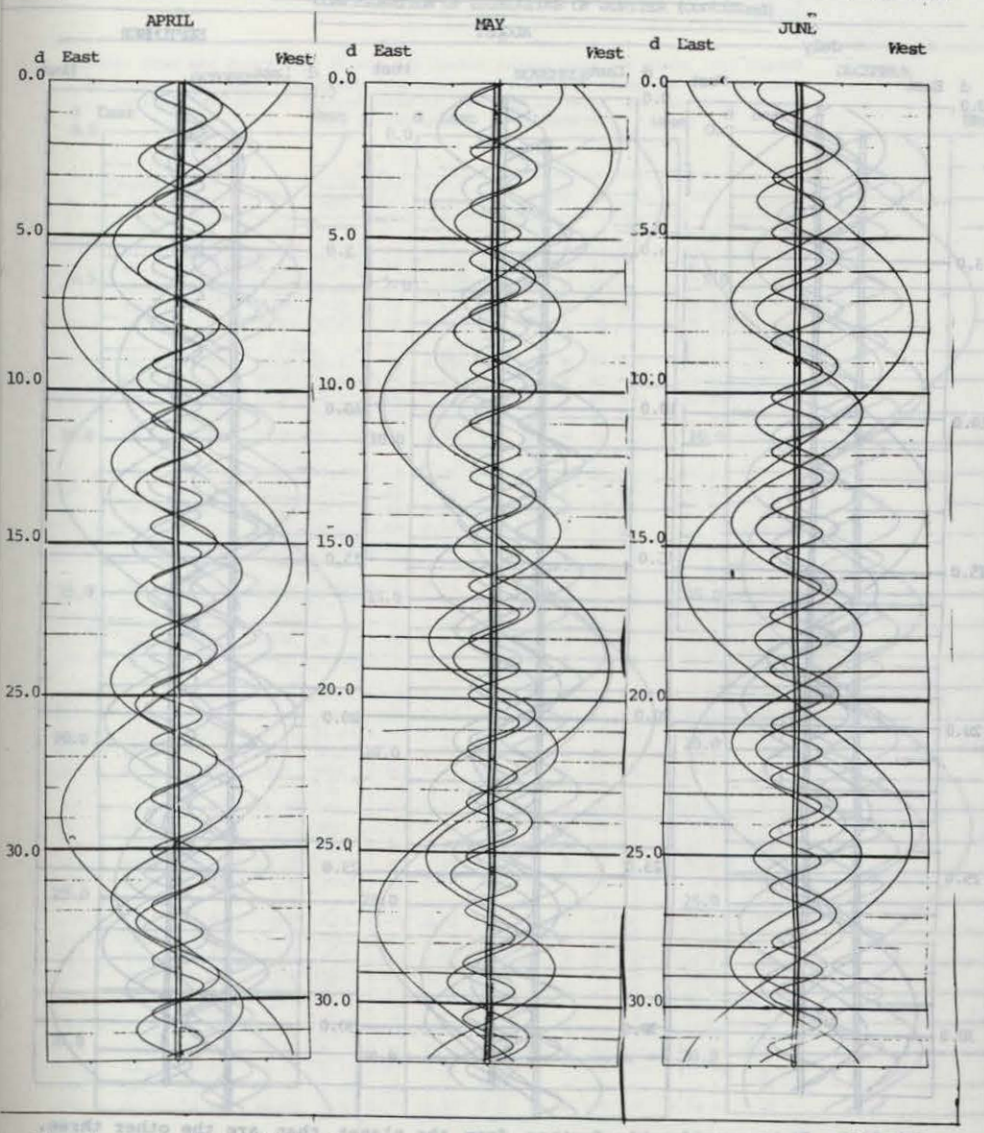
CHANGES OF LONGITUDE IN INTERVALS OF TIME

h	°	h	°	m	°	m	°	m	°
1	36·3	6	217·6	10	6·0	1	0·6	6	3·6
2	72·5	7	253·8	20	12·1	2	1·2	7	4·2
3	108·8	8	290·1	30	18·1	3	1·8	8	4·8
4	145·1	9	326·4	40	24·2	4	2·4	9	5·4
5	181·3	10	2·6	50	30·2	5	3·0	10	6·0

CONFIGURATION OF THE SATELLITES OF JUPITER

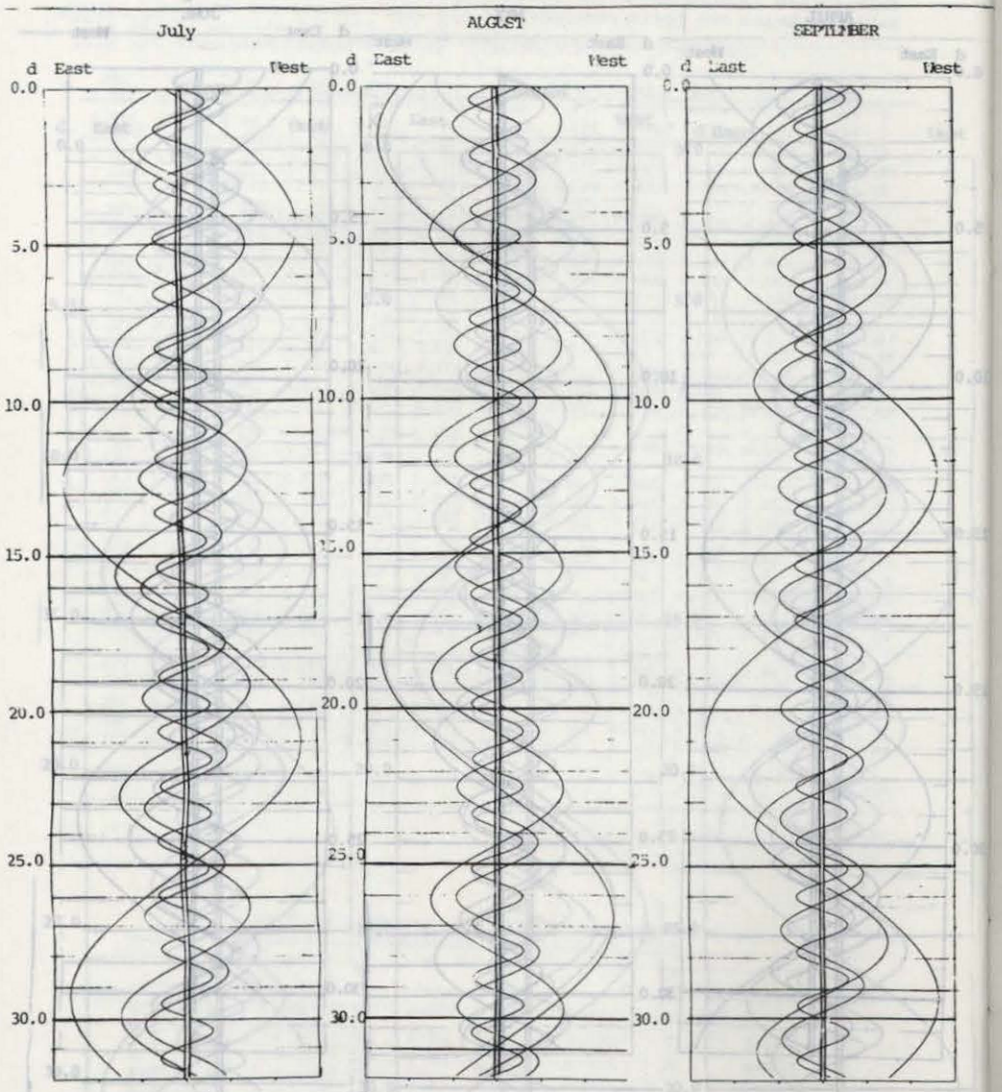


CONFIGURATION OF SATELLITES OF JUPITER (continued)



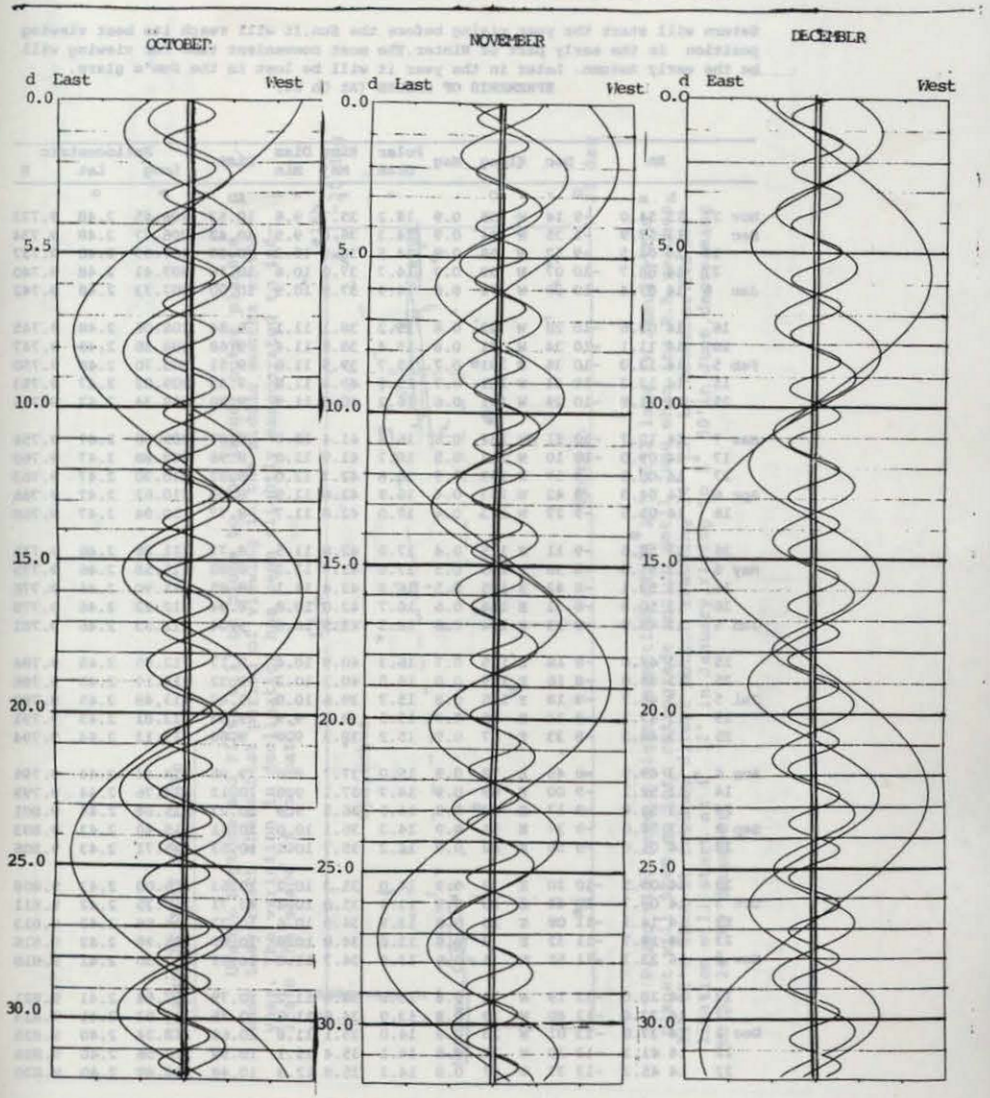
The planes of the orbits of the Galilean satellites almost correspond with the plane of the ecliptic as does that of Jupiter itself, and therefore, our line of sight. Consequently, we see Jupiter and these satellites arranged in a fairly straight line. The inner satellites (I, II and III) are, from Earth, always seen to transit Jupiter, or be occulted by it. Also the Sun is so close to the satellite plane that these always cast shadow-transits on to Jupiter's surface, and suffer eclipse whenever passing behind Jupiter.

CONFIGURATION OF SATELLITES OF JUPITER (continued)



Satellite IV is considerably further from the planet than are the other three. It exhibits eclipse and transit phenomena when the satellites' orbital plane is sufficiently 'edge-on' to Earth and Sun. This year, Satellite IV passes north or south of Jupiter and its shadow during each revolution.

CONFIGURATION OF SATELLITES OF JUPITER (continued)



It may be somewhat mystifying to see a satellite approaching Jupiter and while still some distance from the planet gradually fade from sight. This happens with an eclipse when the satellite enters the shadow cast by Jupiter which lies to the west of the planet before opposition. The reverse effect can be seen after opposition, when a satellite which has been occulted appears as a point of light, some distance from the planet's disc, and gradually increases in brightness.

SATURN

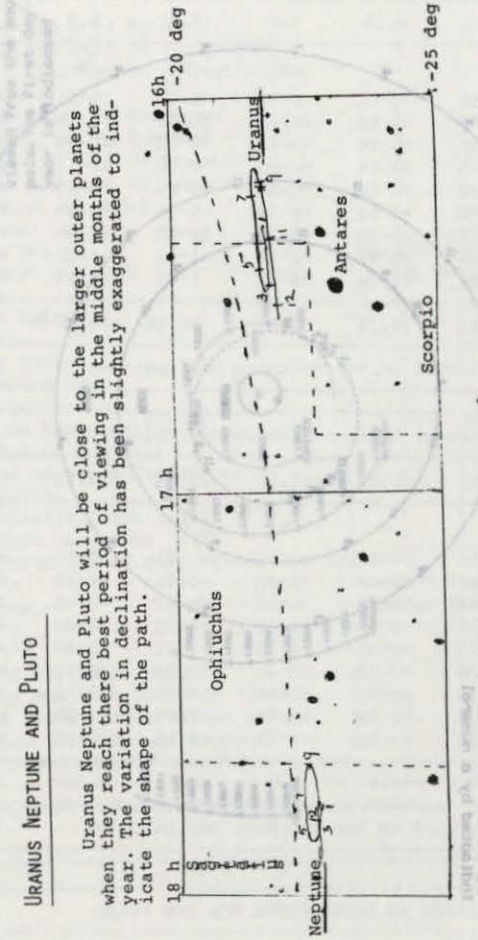
Saturn will start the year rising before the Sun.It will reach its best viewing position in the early part of Winter.The most convenient time for viewing will be the early Autumn. Later in the year it will be lost in the Sun's glare.

EPHEMERIS OF SATURN (At Oh UT)

	RA	Dec	Elong	Mag	Polar Diam	Ring Maj	Ring Min	Diam Dist	Heliocentric Long	Heliocentric Lat	R
	h m	° '	°		"	"	"	AU	°	°	
Nov 27	13 54.0	-9 14	W 35	0.9	14.2	35.7	9.6	10.53	206.45	2.48	9.732
Dec 7	13 57,9	-9 35	W 44	0.9	14.3	36.0	9.9	10.42	206.77	2.48	9.734
17	14 01.5	-9 52	W 53	0.9	14.5	36.5	10.3	10.30	207.09	2.48	9.737
27	14 04.7	-10 07	W 62	0.9	14.7	37.0	10.6	10.16	207.41	2.48	9.740
Jan 6	14 07.4	-10 20	W 72	0.8	14.9	37.5	10.9	10.00	207.73	2.48	9.742
16	14 09.6	-10 28	W 82	0.8	15.2	38.1	11.1	9.84	208.06	2.48	9.745
26	14 11.1	-10 34	W 91	0.8	15.4	38.8	11.4	9.68	208.38	2.48	9.747
Feb 5	14 12.0	-10 36	W 101	0.7	15.7	39.5	11.6	9.51	208.70	2.48	9.750
15	14 12.2	-10 34	W 111	0.7	15.9	40.1	11,8	9.35	209.02	2.47	9.753
25	14 11.8	-10 29	W 121	0.6	16.2	40.8	11.9	9.20	209.34	2.47	9.755
Mar 7	14 10.7	-10 21	W 132	0.6	16.4	41.4	12.0	9.07	209.66	2.47	9.758
17	14 09.0	-10 10	W 142	0.5	16.7	41.9	12.0	8.96	209.98	2.47	9.760
27	14 06.8	-9 57	W 153	0.5	16.8	42.3	12.0	8.87	210.30	2.47	9.763
Apr 6	14 04.3	-9 42	W 163	0.4	16.9	42.6	11.9	8.80	210.62	2.47	9.766
16	14 01.5	-9 27	W 173	0.4	17.0	42.8	11.7	8.77	210.94	2.47	9.768
26	13 58.6	-9 11	E 175	0.4	17.0	42.8	11.5	8.77	211.26	2.46	9.771
May 6	13 55.8	-8 56	E 165	0.5	17.0	42.7	11.3	8.80	211.58	2.46	9.773
16	13 53.1	-8 42	E 155	0.5	16.8	42.4	11.1	8.85	211.90	2.46	9.776
26	13 50.8	-8 31	E 144	0.6	16.7	42.0	10.8	8.94	212.22	2.46	9.778
Jun 5	13 48.9	-8 23	E 134	0.6	16.5	41.5	10.6	9.04	212.53	2.46	9.781
15	13 47.6	-8 18	E 125	0.7	16.3	40.9	10.4	9.17	212.85	2.45	9.784
25	13 46.8	-8 16	E 115	0.8	16.0	40.3	10.2	9.32	213.17	2.45	9.786
Jul 5	13 46.7	-8 18	E 105	0.8	15.7	39.6	10.0	9.47	213.49	2.45	9.789
15	13 47.1	-8 24	E 96	0.9	15.5	39.0	9.9	9.63	213.81	2.45	9.791
25	13 48.2	-8 33	E 87	0.9	15.2	38.3	9.9	9.80	213.13	2.44	9.794
Aug 4	13 49.9	-8 45	E 78	0.9	15.0	37.7	9.8	9.96	214.44	2.44	9.796
14	13 52.1	-9 00	E 69	0.9	14.7	37.1	9.8	10.12	214.76	2.44	9.799
24	13 54.8	-9 17	E 60	0.9	14.5	36.5	9.9	10.27	215.08	2.44	9.801
Sep 3	13 58.0	-9 37	E 51	0.9	14.3	36.1	10.0	10.41	215.40	2.43	9.803
13	14 01.6	-9 58	E 42	0.9	14.2	35.7	10.1	10.53	215.71	2.43	9.806
23	14 05.5	-10 20	E 33	0.9	14.0	35.3	10.2	10.63	216.03	2.43	9.808
Oct 3	14 09.7	-10 44	E 25	0.9	13.9	35.0	10.4	10.71	216.35	2.42	9.811
13	14 14.1	-11 08	E 16	0.8	13.9	34.9	10.6	10.77	216.66	2.42	9.813
23	14 18.7	-11 32	E 8	0.8	13.8	34.8	10.8	10.80	216.98	2.42	9.816
Nov 2	14 23.3	-11 55	W 3	0.8	13.8	34.7	11.0	10.81	217.30	2.41	9.818
12	14 28.0	-12 19	W 11	0.8	13.8	34.8	11.2	10.79	217.61	2.41	9.821
22	14 32.6	-12 40	W 19	0.8	13.9	34.9	11.5	10.75	217.93	2.41	9.823
Dec 2	14 37.0	-13 01	W 28	0.8	14.0	35.1	11.8	10.68	218.24	2.40	9.825
12	14 41.2	-13 20	W 37	0.8	14.1	35.4	12.1	10.59	218.56	2.40	9.828
22	14 45.2	-13 37	W 47	0.8	14.2	35.8	12.3	10.48	218.88	2.40	9.830
Jan 1	14 48.7	-13 51	W 56	0.8	14.4	36.3	12.6	10.35	219.19	2.39	9.832
11	14 51.8	-14 03	W 65	0.8	14.6	36.8	12.9	10.21	219.51	2.39	9.835
21	14 54.4	-14 13	W 75	0.8	14.8	37.4	13.2	10.05	219.82	2.39	9.837
31	14 56.4	-14 19	W 84	0.7	15.1	38.0	13.5	9.89	220.14	2.38	9.84o

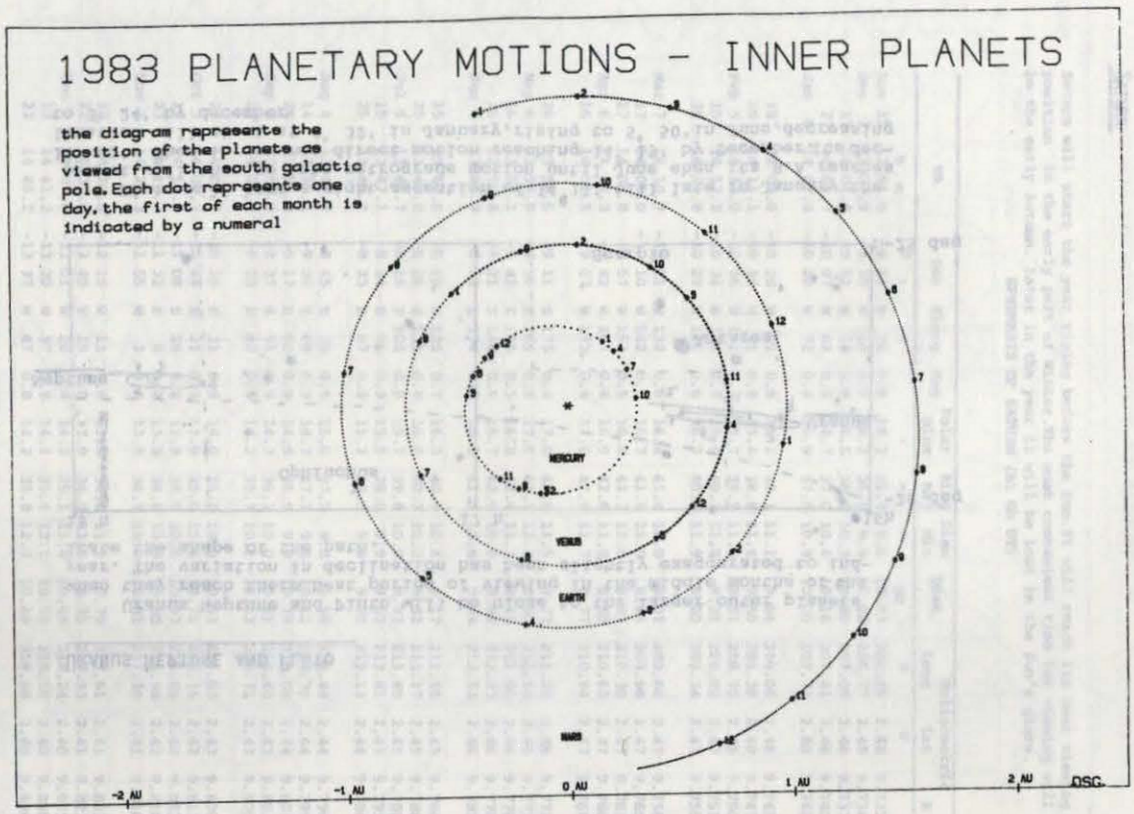
URANUS NEPTUNE AND PLUTO

Uranus Neptune and Pluto will be close to the larger outer planets when they reach there best period of viewing in the middle months of the year. The variation in declination has been slightly exaggerated to indicate the shape of the path.



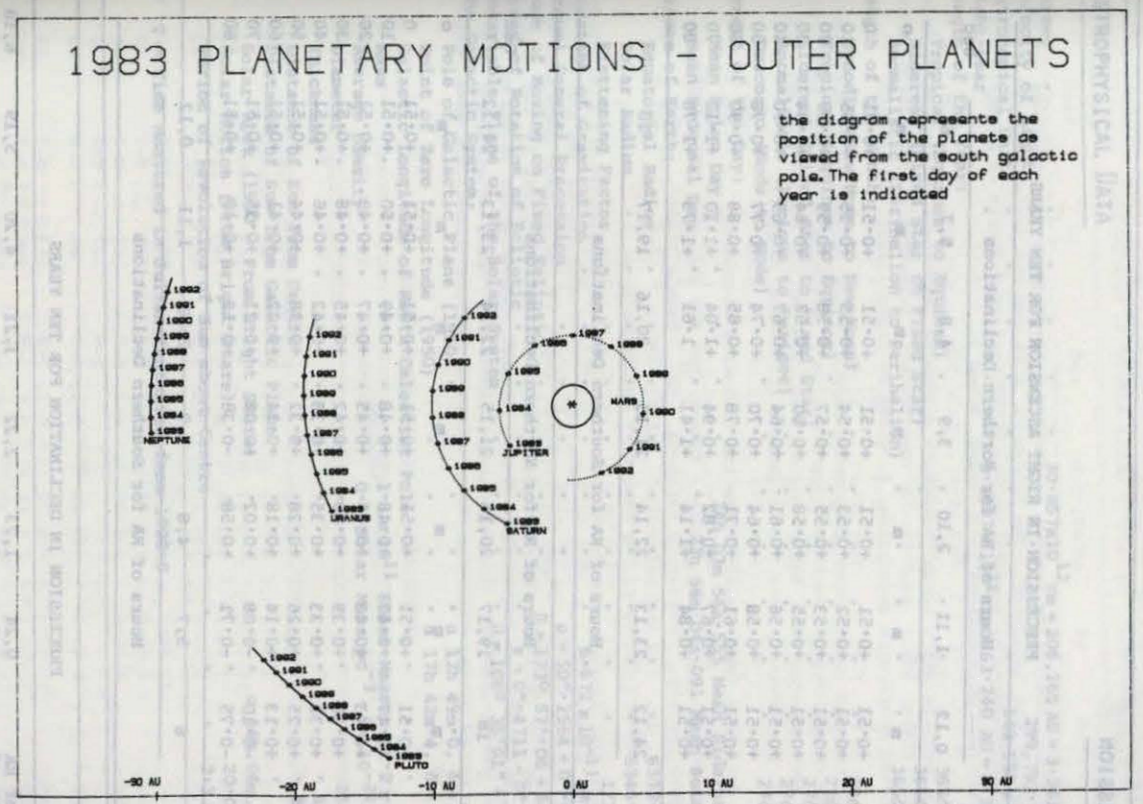
Pluto will have a right ascention of 14^{h} 11' till late in January the planet will then go into retrograde motion until June ehen its R.A.reaches 14^{h} 02'. Then it resumes direct motion reaching 14^{h} 19' by Decenber.Its declination will start at 4° 32' in January,rising to 5° 50'in June,decreasing to 3° 24' by december.

1983 PLANETARY MOTIONS - INNER PLANETS



Heliocentric co-ordinates are measured perpendicular to and around the ecliptic, centered on the middle of the Sun. The first point in Aries at the moment of measurement is zero. The Earth's heliocentric longitude is the Sun's geocentric longitude plus 180 degrees.

1983 PLANETARY MOTIONS - OUTER PLANETS



PRECESSION

PRECESSION IN RIGHT ASCENSION FOR TEN YEARS

Hours of RA for *Northern* Declinations

Dec	0,12	1,11	2,10	3,9	4,8	5,7	6	Dec
°	m	m	m	m	m	m	m	°
0	+0·51	+0·51	+0·51	+0·51	+0·51	+0·51	+0·51	0
10	+0·51	+0·52	+0·53	+0·54	+0·55	+0·55	+0·55	10
20	+0·51	+0·53	+0·55	+0·57	+0·58	+0·59	+0·59	20
30	+0·51	+0·55	+0·58	+0·60	+0·62	+0·64	+0·64	30
40	+0·51	+0·56	+0·61	+0·64	+0·67	+0·69	+0·70	40
50	+0·51	+0·58	+0·64	+0·70	+0·74	+0·77	+0·78	50
60	+0·51	+0·61	+0·71	+0·78	+0·85	+0·88	+0·90	60
70	+0·51	+0·67	+0·82	+0·94	+1·04	+1·10	+1·12	70
80	+0·51	+0·84	+1·14	+1·41	1·61	+1·73	+1·78	80
	24,12	23,13	22,14	21,15	20,16	19,17	18	

Hours of RA for *Southern* Declinations

Hours of RA for *Northern* Declinations

Dec	18	19,17	20,16	21,15	22,14	23,13	24,12	Dec
°	m	m	m	m	m	m	m	°
0	+0·51	+0·51	+0·51	+0·51	+0·51	+0·51	+0·51	0
10	+0·47	+0·47	+0·48	+0·48	+0·49	+0·50	+0·51	10
20	+0·43	+0·43	+0·44	+0·45	+0·47	+0·49	+0·51	20
30	+0·38	+0·39	+0·40	+0·42	+0·45	+0·48	+0·51	30
40	+0·32	+0·33	+0·35	+0·38	+0·42	+0·46	+0·51	40
50	+0·25	+0·26	+0·28	+0·32	+0·38	+0·44	+0·51	50
60	+0·13	+0·14	+0·18	+0·24	+0·32	+0·41	+0·51	60
70	-0·10	-0·08	-0·02	+0·08	+0·21	+0·35	+0·51	70
80	-0·75	-0·71	-0·58	-0·38	-0·12	+0·19	+0·51	80
	6	5,7	4,8	3,9	2,10	1,11	0,12	

Hours of RA for *Southern* Declinations

PRECESSION IN DECLINATION FOR TEN YEARS

Hours of RA	0,24	1,23	2,22	3,21	4,20	5,19	6,18
Change in Dec	+3'.3	+3'.2	+2'.9	+2'.4	+1'.7	+0'.9	0
Hours of RA	6,18	7,17	8,16	9,15	10,14	11,13	12
Change in Dec	0	-0'.9	-1'.7	-2'.4	-2'.9	-3'.2	-3'.3

ASTROPHYSICAL DATA

Parsec	$30{\cdot}857 \times 10^{12}$ km = 206,265 AU = 3·2616 l.y.
Velocity of Light	299,792·5 km/s
Astronomical Unit	$149{\cdot}598 \times 10^{6}$ km
Light-year	$9{\cdot}4607 \times 10^{12}$ km = 63·240 AU = 0·3066 pc
Length of the Year:	
Tropical (Equinox to Equinox)	365d·24219
Sidereal (Fixed Star to Fixed Star)	365d·25636
Anomalistic (Perihelion to Perihelion)	365d·25964
Length of the Month:	
Synodic (New Moon to New Moon)	29d·53059
Tropical (Equinox to Equinox)	27d·32158
Sidereal (Fixed Star to Fixed Star)	27d·32166
Anomalistic (Perigee to Perigee)	27d·55455
Draconic (Node to Node)	27d·21222
Length of the Day:	
Mean Solar Day	24h 03m 56s·555 Mean Sidereal Time
Mean Sidereal Day	23h 56m 04s·091 Mean Solar Time
Figure of Earth:	
Equatorial Radius	6378·140 km
Polar Radius	6346·755 km
Flattening Factor	1/298·257
Constant of Gravitation	$6{\cdot}672 \times 10^{-11}$ $m^3/kg\ s^2$
Annual General Precession	$p = 50''{\cdot}2564 + 0''{\cdot}0222\ T^*$
Node of Moving on Fixed Ecliptic	$\Pi = 173^\circ\ 57'{\cdot}06 + 54'{\cdot}77\ T$
Speed of Rotation of Ecliptic	$\pi = 0''{\cdot}4711 - 0''{\cdot}0007\ T$
Invariable Plane of the Solar System	$\Omega = 106^\circ\ 35'01'' + 3452''\ T$
The Galactic System:	
Pole of Galactic Plane (1950)	α 12h 49m·0, δ +27°·24'
Point of Zero Longitude (1950)	α 17h 42m·4, δ -28°·55'
Galactic Longitude of North Celestial Pole	123° 00
Mass	$1{\cdot}1 \times 10^{11}$ Solar Masses = $2{\cdot}2 \times 10^{41}$ kg
Average Density	0·1 Solar Mass pc^{-3} = 7×10^{-21} kg m^{-3}
Diameter	25,000 pc
Thickness	4,000 pc
Distance of Sun from Centre	8,200 pc
Distance of Sun from Galactic Plane	8 pc
Solar Apex (1950 - From Bright Stars)	α 18h 06m, δ +30°
Solar Motion (From Bright Stars)	20·0 km s^{-1}
Period of Revolution of Sun about Centre	$2{\cdot}2 \times 10^{8}$ yr

* T = Time Measured in Julian Centuries from 1900·0

Double Stars

Double stars afford the amateur astronomer a ready means of evaluating the performance of his telescope. The tables on this and the following page present recent measurements or predictions for 1982 of selected double or multiple stars. The stars have been divided into groups, A and B.

Table A contains stars whose components differ in brightness by mag 1·0 or less. For these stars, under good seeing conditions, a telescope of aperture d cm may resolve two stars with separation, Δ, given by Dawes' Limit, $\Delta = 11''.6/d$.

Table B contains stars whose components have a larger inequality of brightness. In these cases, Dawes' Limit no longer applies. Although the listed separation may be much greater than Dawes' Limit, resolution of the components may not be achieved, particularly when the brightness difference is great.

The data have been compiled from the following sources:

Wepner, W., *'291 Doppelstern - Ephemeriden für die Jahre 1975 - 2000*
Webb Society, *'Observer's Handbook - Vol 1 Double Stars'*.
Meeus, J., *'Sky and Telescope'*, Vol 41, 1971.
Becvar, A., *'Atlas of the Heavens - Catalogue'*.

The stars are listed by name or by their number in the catalogues of F.G.W. Struve (Σ), S.W. Burnham (β), or John Herschel (h). Star coordinates (RA and Dec) are for the equinox 1950·0. PA is the position angle of the fainter component with respect to the brighter, measured from north towards east; Sep is the angular separation of the two components. A date of 1982 indicates the values of PA and Sep are predictions for the beginning of 1982; any other date is the date of observation of a star which has shown relatively little change over many years.

EPHEMERIDES OF DOUBLE STARS (TABLE A)

Star	RA	Dec	Magnitudes	PA	Sep	Date
	h m	° ′		°	″	
61 Cyg	21 04·7	+38 30	5·2, 6·0	146·8	29·2	1982
ζ Psc	1 11·1	+ 7 19	5·6, 6·5	64	23·0	73
Σ 1627	12 15·6	- 3 41	6·6, 6·9	169	20·2	73
2 Pup	7 43·2	-14 34	6·1, 6·8	340	16·6	73
ρ Eri	1 37·9	-56 27	5·8, 5·8	195·1	11·2	83
γ Del	20 44·3	+15 57	4·5, 5·5	269	10·4	52
γ Ari	1 50·8	+19 03	4·8, 4·8	359	8·2	49
β Mon	6 26·4	- 7 00	4·7, 5·2	131	7·2	23
			5·6	107	2·8	39
ζ Cnc	8 09·3	+17 48	5·1, 6·0	80	6·0	83
36 Oph	17 12·3	-26 32	5·3, 5·3	153·2	4·7	83
γ Vir	12 39·1	- 1 11	3·5, 3·5	294·4	3·7	83
ε^1 Lyr AB	18 42·7	+39 37	5·0, 6·1	154·3	2·7	83
ε^2 Lyr CD	18 42·7	+39 34	5·2, 5·5	87·7	2·3	83
α Gem	7 31·4	+32 00	1·9, 2·9		2·4	83
τ Oph	18 00·4	- 8 11	5·2, 5·7	277·9	1·8	83
ζ Aqr	22 26·3	- 0 17	4·3, 4·5	220·1	1·8	83
α Psc	1 59·4	+ 2 31	4·2, 5·2	276·9	1·7	83
γ Cen	12 38·7	-48 41	2·9, 2·9	356·1	1·6	83
γ CrA	19 03·0	-37 08	4·8, 5·1	143·6	1·4	83

EPHEMERIDES OF DOUBLE STARS (TABLE A) (Continued)

Star	RA	Dec	Magnitudes	PA	Sep	Date
	h m	° ′		°	″	
η Ori	5 22·0	- 2 26	3·8, 4·8	82	1·4	1967
Σ 138	1 33·4	+ 7 23	7·7, 7·7	51	1·4	74
β Mus	12 43·2	-67 50	3·7, 4·0	31·3	1·3	83
λ Oph	16 28·4	+ 2 06	4·2, 5·2	15·4	1·4	83
h 5014	18 03·2	-43 26	5·7, 5·7	8·1	1·2	83
Σ 186	1 53·3	+ 1 36	6·8, 6·8	54·3	1·2	83
ξ Sco	16 01·6	-11 14	4·9, 4·9	25·7	1·1	83
Σ 1126	7 37·5	+ 5 21	6·4, 6·7	159	1·1	66
ε Equ	20 56·6	+ 4 06	6·0, 6·3	285	1·1	83
ψ Vel	9 28·7	-40 15	4·1, 4·6	129·3	1·0	86
y Cen	13 50·6	-35 25	6·3, 6·5	306·7	0·8	83
14 Ori	5 05·2	+ 8 26	5·8, 6·5	113	0·7	83
48 Vir	13 01·3	- 3 24	7·1, 7·4	198	0·7	73
γ Lup	15 31·8	-41 00	3·5, 3·6	270·6	0·7	83
β 744	4 19·4	-25 51	6·6, 6·9	328·5	0·6	83
β 205	8 30·9	-24 26	6·9, 7·0	353·4	0·6	83
γ Sex	9 50·0	- 7 52	5·8, 6·1	83	0·5	83
β 920	12 13·2	-23 05	6·8, 7·9	40	0·5	83
γ Cir	15 19·4	-59 09	5·1, 5·5	307·2	0·5	83
η Oph	17 07·5	-15 40	3·0, 3·5	263·4	0·4	83
β 932	13 32·1	-12 25	6·5, 6·9	47·6	0·3	83
ε Hya AB	8 44·1	+ 6 36	4·1, 4·4	175	0·3	82

EPHEMERIDES OF DOUBLE STARS (TABLE B)

Star	RA	Dec	Magnitudes	PA	Sep	Date
	h m	° ′		°	″	
23 Ori	5 20.2	3 29	5.0, 7.1	30	32.0	'73
α Cent	14 36.2	-60 38	0.3, 1.7	210.5	21.64	83
α C Ma	6 43.0	-16 39	-1.5, 8.5	41.5	9.19	83
β Ori	5 12.1	-8 15	0.1, 9.3	204	10.1	73
ξ Boo	14 49.1	19 18	4.8, 6.9	330.7	7.19	83
ρ Ori	5 10.7	2 48	4.6, 8.4	64	6.7	73
δ Gem	7 17.1	22 05	3.6, 8.2	222.2	6.04	83
Σ 701	5 20.9	-8 28	6.0, 7.8	140	6.0	73
α C Mi	7 36.7	5 21	0.3,10.3	345.6	5.10	83
γ Leo	10 17.2	20 06	2.2, 3.5	123.6	4.33	83
α For	3 09.9	-29 12	3.9, 6.5	305.8	3.07	83
ε Hya AC	8 44.1	6 36	3.4, 6.8	288.2	2.75	83
α Sco	16 26.3	-26 19	0.9, 5.5	275.5	2.55	83
ζ Ori	5 38.2	-1 58	1.9, 4.0	163.4	2.36	83
70 Oph	18 02.9	2 31	4.2, 6.0	300.2	2.29	83
Σ 1104	7 27.1	-14 53	6.4, 7.5	16.1	2.07	83
μ Vel	10 44.6	-49 08	2.7, 6.4	52.9	2.11	83
ν Sco CD	16 09.1	-19 20	6.9, 7.9	49	1.4	74
AB			4.4, 6.9	358	1.0	74
τ Scl	1 33.8	-30 10	6.0, 7.1	333.8	1.53	83
ι Leo	11 21.3	10 48	4.0, 6.7	146.5	1.27	83

ASTRONOMICAL DIARY

The events listed here are presented in chronological order of their occurence to the nearest hour of Australian Eastern Standard Time. The list is not exhaustive, conjunctions of planets and bright stars are often omitted. Clustering of planets occur this year and inorder to identify them, note the number of times, when a number of conjunction with the Moon events occur, over one or two days.

Date	d	h	Event
Jan	3	02	Earth at perihelion
	7	20	Mercury 2°N. of Venus
	12	11	Neptune occluded by Moon
	17	14	Mars 3°N. of Moon
	18	23	Vesta 0°.8 S. of Moon
	27	20	Mercury stationary
Feb	8	19	Neptune 0°.8 N. of Moon
	11	01	Mercury 2° N. of Moon
	16	05	Vesta 0°. S. of Moon
	17	20	Annual General Meeting
	18	20	Members night.
Mar	3	16	Saturn 1°.7 S of Moon
	8	03	Neptune Occluded by Moon
	17	20	General Meeting
	21	05	Equinox
	24	20	Members night.
	30	24	Saturn 1°.5 S. of Moon
Apr	2	19	Uranus 1°.6 S. of Moon
	2	23	Jupiter 0°.6 S. of Moon
	4	11	Neptune 1°. 3 N. of Moon
	9	22	Mercury 1°.4 N. of Mars
	19	04	Pluto at opposition
	21	20	General Meeting
	22	05	Saturn at opposition
	22	20	Members night
	27	05	Saturn 1°.6 S. of Moon
	30	03	Uranus 1°.5 S. of Moon
May	1	05	Jupiter 0°.6 S. of Moon
	1	19	Neptune 1°.5 N. of Moon
	16	11	Venus 1°.5 N. of Moon
	16	23	Jupiter 0°.8 N. of Uranus
	19	20	General Meeting
	20	20	Members night
	24	09	Saturn 1°.8 S. of Moon
	27	07	Jupiter 0°.8 S. of Moon
	27	09	Uranus 1°.6 S. of Moon
	29	02	Neptune 1°.6 N. of Moon
	29	11	Uranus at opposition.
Jun	8	16	Mercury greatest elongation W.(24°)
	9	11	Mercury 0°.8 S. of Moon
	11	15	Partial Eclipse of Sun
	16	17	Venus greatest elongation E(45°)
	16	20	General Meeting
	17	20	Members night
	22	09	Solstice
	23	07	Jupiter 1°.2 S. of Moon
Jul	6	20	Earth at Aphelion
	15	20	Members night
	17	19	Saturn 2°S. of Moon
	20	01	Venus greatest brilliancy
	20	09	Jupiter 1°.4 S.of Moon
	20	17	Uranus 1°.7 S. of Moon
	22	12	Neptune 1°.5 N. of Moon
	25	06	Eclipse of Moon

Date	d	h	Event
Aug	1	02	Mercury 0°.4 N.of Regulus
	12	20	Members night
	14	04	Saturn 1°.9 S. of Moon
	16	16	Jupiter 1°.3 S. of Moon
	16	23	Uranus 1°.6 S. of Moon
	18	17	Neptune 1°.5 N. of Moon
	20	02	Mercury greatest elongation E.(27°)
Sep	10	17	Saturn 1°.7 S. of Moon
	13	04	Jupiter 0°.9 S. of Moon
	13	07	Uranus 1°.3 S. of Moon
	14	24	Neptune 1°.7 N. of Moon
	15	20	General Meeting
	16	20	Members night
	24	01	Equinox
Oct	1	17	Venus greatest brilliancy
	8	09	Saturn 1°.4 S. of Moon
	10	18	Uranus 1°.0 S. of Moon
	10	21	Jupiter 0°.4 S of Moon
	12	08	Neptune 2° N. of Moon
	13	11	Jupiter 5° N. of Antares
	14	20	Members night
	20	20	General Meeting
	28	23	Venus 1°.7S. of Mars
Nov	5	06	Venus greatest elongation W. (47°)
	7	06	Uranus 0°.7 S. of Moon
	7	17	Jupiter occluded by Moon
	8	19	Neptune 2° N. of Moon
	17	20	General Meeting
	19	20	Members night
	20	14	Mercury 1°.8 S. of Uranus
	20	07	Mercury 3° N. of Antares
Dec	2	14	Saturn 0°.9 S. of Moon
	3	17	Mercury 4° S. of Neptune
	6	13	Mercury 0°.9 S. of Moon
	17	21	Venus 0.2° N of Saturn
	20	12	Penumbral Eclipse (Invisible)
	22	21	Solstice
	27	18	Mars 4° N. of Spica
	28	10	Mars 3° S. of Moon
	30	02	Saturn 0°.6 S. of Moon
	31	05	Venus occluded by Moon
	31	24	Uranus 0°.4 S. of Moon

NOTES.

NOTES

CORRECTIONS TO THE 1983 YEARBOOK

The following corrections should be made to the 1983 Yearbook. the correct statement is supplied underlined below

P.3 *Public Relations Officer* W. Orcheston

Current Phenomena: J.B. Trainor, 27 Alder St.- -

Historical: W. Orcheston, - - - -

Solar: G.N. Sprott

p.5. - - MR P.F. Raw - - -

Latitude 37 deg 49 min 54.1 sec S

p.15 Fourth last paragraph
- - -solar day is equal to 24h 03m 56.6s - - -

Third last paragraph -
The table on page 16 gives - - -

p.32 First paragraph -
The diagram on the previous page - - -
Second paragraph,third sentence -
Sunset is at 17 h 47 m,just as Saturn rises.Mars sets at 18h 20m, Mercury at 18h 30m,Uranus rises at 19h 40m Jupiter at 19h 45 m, Neptune at 21h 00m,Pluto sets at 6h 20m.
Fourth paragraph
The tables following page 38 give - - -

p.34 and 35
Replace UT with AEST
The Occultation Section,H.M. Nautical Almanac Office is now defunct.

p. 36
Replace (AEST) with UT.
- - given on page 35 - - -

p 37
The track across Victoria starting at B on the S.A. border is no 23.

Astronomical Society of Victoria

Founded in 1922,The Astronomical Society of Victoria comprises some 500 members throughout Victoria and other states; there even being a number of members resident in other countries. Its objects are to encourage the study and practice of astronomy,to disseminate knowledge of the science and to afford greater facilities for this study among its members. The Society is open to all persons interested in astronomy.

The nomination fee is $10.00 and the annual subscriptions are as follows Senior Metropolitan Members (that is,over 18 years of age and residing within a boundary of 50 kilometers radius from the GPO Melbourne), and, all Institutional Members - $20.00. Other catagories,comprising Junior Metropolitan Members,Country Members (Senior and Junior) and full-time Students under 21 years of age - $15.00.

When members pay their subscriptions,they might like to add a donation to the Telescope Fund,enabling the construction of the 20inch telescope and its observatory to be continued. Most details of the telescope have been planed and construction is under way.The choice of a sight becomes a compromise of many factors,the cost of land and services presents the biggest problem. A donation of $2.00 or more per member would go some of the way to free the hands of the Site Committee in this direction. As a result, any donation big or small is very welcome at the present time.

Meetings are usually held on the 3rd Thursday of each month,February to November inclusive,at 8.00pm in the State Library and Museum Theatrette, enter through the gate in Latrobe Street mid-way between Swanston and LaTrobe Street.Visiyors are welcome.Admission free.

Privileges of membership include the right to borrow books and periodicals from the Society's Library;the receipt of bi-monthly issues of The Journal,containing articles and reports of meetings,and the Astronomical Yearbook, giving data adjusted for local observations etc., and access on regular occasions to the Society's Telescopes on Members Nights.Included in the Society's Telescopes are a 12 in and a 10 in reflector and two refractors,a 4in and an 80mm Zeiss. After attending a course in general elementary astronomy and passing a test of proficiency in theory and in the use of one of the above instruments,members may be appointed Public Demonstrators and have the right to use the instruments for private use.

Many members have constructed their own telescopes,and their help and advice is available to newcomers desiring to do the same. Other sections are open for those interested in various aspects of astronomy - Varable stars, Nova Search,Astrophotography,etc. Section Directors are included in the list of Officer of the Society at the beginning of the Yearbook.

Further information regarding the Society may be obtained by writing to:

The Secretary,
Astronomical Society of Victoria,
Box 1059 J GPO Melbourne
Victoria,Australia. 3001

For
PUBLIC DEMONSTRATION BOOKINGS
PLANETARIUM BOOKINGS
ASTRONOMICAL ENQUIRIES

Phone .

SCIENCE MUSEUM OF VICTORIA
328 SWANSTON STREET
PHONE 6699888

Printing by G.A. Paul & Sons 80 3921 *Recommended price $3.00* *ISSN 0067-0006*

	DATE/TIME	PRESS	OTHER	PLACE
4	20May 0030	←	3BO	BENDIGO
5	20May 0120	←	AAP	BENDIGO
6	20May 0215	←	3BO	BENDIGO
1.	21May 0830	Herald		"
2	21May 0835	Herald		"
4	21May 0845	←	9 NEWS	"
6	21May 0930	←	ABC NEWS	"
8	21May 1030		X ANONYMOUS	"
9.	21May 1035	←	3UZ NEWS	"
12	21May 1050		X Anonymous	"
15.	21May 1115	←	Channel 7	"
20	21May 1525		X MRS. FISHER	MONBULK
25	22May 0010		X MR. Sutton	STANHOPE
1.	22May 0955	←	3AW	BENDIGO
2.	22May 1000	←	ABC	"
3	22May 1020	←	3AW	"

	DATE/TIME	PRESS	OTHER	PLACE
4	22May 1030	←	VARIOUS MEDIA	BENDIGO
7.	22May 1930		MRS MARTIN	ALTONA
8	22May 2000		BENDIGO POLICE	BENDIGO
9	22May 2200	←	VARIOUS MEDIA	BENDIGO

UNK No

no reports night sf

EVANS

1/ Spoke to following witnesses:

Mrs Judy Evans
Mr Mike Evans
Mr George Fish (Prison Officer)

all saw + reported others as having sight rotating, flashing lights

2/ obtained photocopies of med. records from Bendigo gaol for Fri, Sat, Sun nights.

3/ obtained orgiral negatives from Mr Evans (for which I have issued a receipt)

4/ spoke with following press/media:

Bendigo Advertiser
Channels 9
" 7
" 10
" 8 (Bendigo)

ABC (or return to Melb)
Macquarie network (ditto)

5 Mr Fish reported that he was alerted to the lights by prison officers at another prison near Steppanton. Later he was able to hear the officers at Steppanton talking to each other on their hand-held UHF radios.
- prima facie evidence of ducting.

Collateral: Hf radio ham following the news called home + said he had great unusual difficulty receiving clear signals in Hf band on Sat night. I have yet to follow this through.

6/ Mrs + Mr Evans observed on Sat night from points 15 mls ~~ak~~ apart. ~~light~~ what they considered to be the same object. Both people saw the ~~object~~ light in the SE skies. This implies that the light seen was high + a long way away

Course of action

a) contact police \ taxi operators night watching co's (users of UHF radios) in areas where sightings were reported to attempt to form a more comprehensive picture of radio propogation conditions on Fri \ Sat nights

b). send pro-formas to individuals whose names were supplied by Mr Evans + to others who have or are expected shortly to contact RAAF

c) attempt to correlate directions of sightings

d) obtain dupe negs from CPE + copies of the imagery:
   (i) for RAAF records
   (ii) for Mr Evans

e) return all material handed to me by Mr Evans back to him ASAP.

Other points.

1. Sun yesterday US analysis VUFORS

2. railway as mode of transport