to hold a meeting in South Africa and when the first meeting of the S.A.A.A.S. was held in Cape Town in 1903 with him as President, the formal invitation was sent, though informally much had been done previously. The British Association came out in 1905 and those of us who remember it know that it was a wonderful success. The City Hall, finished though not yet in use for the City, was the place for the offices, public meetings and meetings of sections. Sir David was in all the innumerable details of arranging hospitality (which was profoundly given), the railway journeys through the Union, the sea journey from Cape Town to Durban by which many went rather than by train, the railway journey to the Victoria Falls, where the president, George Darwin, opened the bridge over the Zambesi, and the railway journey to Beira from where some returned by ship to England. It was natural that Sir David should persuade a goodly number of distinguished astronomers to come out and it was at Cape Town that Kapteyn announced his theory of star streams. The Railways were most liberal in giving free passes to all the visitors (and to about a hundred South African members of the Association). But Professor X did not think them liberal enough; arriving early, he went out to the Royal Observatory to see Sir David the day before he got his pass; on getting the pass he applied for a refund of ninepence, his return ticket to Observatory!

I cannot remember about Art but Sir David was keen on music, he was a regular attender at the Chamber Concerts which were given before the Municipal Orchestra was founded. Two of Sir David's nephews who lived with him I remember. Fred Powell and Bruce Powell; Fred was a student at the South African College soon after I came here, Bruce was some years later. Fred, a Major in the Bedford Regiment, was killed in the Great War; Bruce, Lieutenant in the R.G.A., came through it and returned to South Africa.

I must end on the note on which I began, that in his day out here, Sir David Gill was a source of inspiration and a real help to all who were striving to spread scientific knowledge and all who by research were enlarging the boundaries of science.

------oOo------

Gill's Work on the Determination of the Solar Parallax.

In 1858, the Astronomer Royal, Sir George Airy summarized his views of the relative values of available methods of determining the solar parallax from observations of Mars and Venus. His summary was given to call attention to approaching favourable oppositions of Mars in 1860, 1862 and 1877 and the two transits of Venus in 1874 and 1882. He stressed the importance of observing Mars, in fact, he favoured the Mars method, but at the same time he felt that future astronomers would not be satisfied unless all practical use was made of the transits of Venus. He maintained that Mars at a favourable opposition approaching as it does within 0.4 astronomical unit of the earth, would give a better determination of the Sun's parallax than Venus.

It was with just such an opinion on the subject of the determination of the solar parallax from the transit of Venus that Gill and Lord Lindsay set out for Mauritius to observe the transit of 1874. Gill was certain that the observational difficulties involved in the timing of the instance of contact of the planet's disc with the limb of the sun, would give results of no greater reliability and that the method would be useful only as a check.

But Gill had another string to his bow. During his stay at Dun Echt, he had learned to appreciate the heliometer as an instrument of precision and he saw that it was eminently suitable for making observations for the determination of the solar parallax. In 1872, Galle and Breslau had proposed that instead of Mars one of the Minor Planets would be more suitable, on the grounds that the smaller disc of such a planet would compensate for its greater distance from the Earth. Gill knew that during his stay on Mauritius a favourable opposition of the Minor Planet Juno would occur. Determined to put Galle's proposal and his own opinion of the Heliometer to the test he arranged for the shipment of the instrument to the island. In due course it arrived and the observations carried out. The results he obtained gave a value for the Sun's distance which we now know to be fairly close to the true value. Although the work was not performed under the most favourable conditions, the results, nevertheless, convinced Gill that the best method for getting the Sun's distance would be found in heliometer observations of a Minor Planet in opposition.

It was in November, 1875, that Gill decided to dissolve partnership with Lord Lindsay. In the early summer of 1876 Sir George Airy, who was paying one of his much enjoyed visits to Scotland, happened to ask Mrs Gill of their departure from Lord Lindsay's Observatory at Dun Echt and as to what type of work her husband would be engaged upon in the near future. She spoke of the computations he had to make in connection with the solar parallax and his observations on the Minor Planet Juno. To this Airy replied: "We cannot afford your husband to be without a telescope".

Not long after this remark to Mrs Gill, Airy found occasion to show his appreciation in a practical manner. Gill, now convinced more than ever before of the accuracy of his observations with the heliometer, believed that he could determine the solar parallax from observations of Mars, at its nearest approach to the Earth better than from observations of the transit of Venus. It is true that after his experience with Juno he had come to the conclusion that more accurate work could be done with the Minor Planets, which show in the telescope as mere points of light, than with a larger and nearer planet, like Mars, showing a disc of sensible size and affected by phase. But in the year 1877 Mars would be nearer to us than for the next 100 years and he wanted to do the very best that could be done with that planet.

First he applied to Lord Lindsay for the loan of his 4-inch heliometer. This was freely lent. The next consideration was the selection of a suitable spot on the earth's surface. The Isle of Ascension was eventually decided upon both on account of its position on the equator and of its favourable weather reports. The question of funds remained. It was now that Sir George Airy first used his powerful influence on Gill's behalf and, largely at his instance, the Royal Astronomical Society made an application to the Royal Society to devote to this purpose some of the funds administered by the Government Grants Committee. This was refused, but the R.A.S. gave £250 out of their own funds and raised another £250 by subscription, Airy himself being one of the subscribers. This difficulty being overcome, astronomers felt confident that, in the hands of a man who had already proved what he could do single-handed in adverse circumstances, the success of the Ascension Expedition was assured.

A fortnight before the expedition was due to start, the heliometer was at the rooms of the R.A.S. at Burlington House. Gill was erecting it there when an accident occurred which very nearly ruined the whole plan. He had proposed to show and explain it at the next meeting of the Society, and was busy mounting it in the meeting room. The instrument was supposed to be a "universal equatorial" and Gill had been turning the screw to adjust the polar axis to the latitude of Ascension, when the screw gave out - not being sufficiently long - and the whole complicated mass of apparatus was flung violently to the floor. Mr W.H. Wesley, the assistant secretary of the R.A.S. who was present at the time, says: "And there, on the front seat of the meeting room sat Gill, his face buried in his hands. He said something about everything being ruined-himself-the instrument-the expedition. It was painful to see such a strong man broken down. But it only lasted for a minute or so, he suddenly got up and said 'Let us see what can be done!'". The divided object glass had fortunately escaped injury, having being protected by the metal cap, which struck the meeting room table, leaving a deep dent which can be seen to this day. The eye-pieces with their tubes were ruined, but Gill managed to get them renewed.

On June 14th the Gills sailed from Dartmouth and landed in Ascension on July 13th. Here they were established in an empty cottage and in a few days the instruments were set up without mishap. Clouds obscured Mars every night. The disappointment grew with every night of cloud. It occurred to Gill that the clouds might be local, due to the moisture-laden trade winds passing over the hilltop to the south-east. Simultaneous observations made by Gill and his wife on opposite sides of the island proved this to be the case. So on August 1 the apparatus was dismantled and transferred to a cove near the south point of the island. Here things went better and a splendid set of morning and evening observations of Mars was secured, enough to ensure the complete success of the expedition. A triangulation was then made by heliometer of all comparison stars. The actual opposition of Mars occurred on September 5, 1877 and all the work was completed by November 9.

On January 24 they landed back in England. The reduction of the observations took some time but when finished, they received universal acceptance and settled the conflicting estimates of the Sun's distance.

But Gill was not satisfied. The dream of his life would not be accomplished till he could determine the solar parallax afresh from observations of minor planets with a large heliometer.

Looking forward to available opportunities, Gill found that Iris in 1888 and Victoria and Sappho in 1889 would be exceptionally well placed. He was now at the Cape and had secured a 7-inch heliometer. The employment of the diurnal method at the Cape was not completely satisfactory, nor was the transport of the observer and instrument to some equatorial station compatible with Gill's other duties. The only course open was to combine the southern heliometer observations with corresponding observations in the northern hemisphere. Hence the co-operation of the directors of the other observatories that possessed heliometers - viz Yale, Leipzig, Gottingen, Bamberg and the Radcliffe observatory at Oxford - was invited and promptly given.

The comparison stars were so selected that when the planet was at the greatest zenith distance at which good observations could be made, the two comparison stars were situated one above and the other below the planet. In this way the determination of the parallax is made to rest upon differences of two nearly equal distances measured by means of the heliometer.

The method was to be as far as possible "self-correcting". Errors due to personal habit of the observer were minimised by the use of a reversing prism inserted between the eyepiece and the observer's eye, so as to bring the apparent direction of separation of the images always into the same position with reference to the vertical. The same comparison stars were used in both hemispheres, thus eliminating errors in the adopted positions of the stars.

Twenty-two observatories co-operated, some to get the positions of these stars and 9620 observations of 115 stars were utilised. They were combined by Auwers, who also visited the Cape and took part in the observations of Victoria. From this able and thorough discussion of the meridian observations, coupled with the heliometer triangulations, the places of the comparison stars were derived with unusual accuracy.

The resulting heliometer determinations of the solar parallax were -

From Victoria	8".8013 ± 0".0061		
" Sappho	8".7981 ± 0".0114		
" Iris	8".8120 ± 0".0090		
Mean	8".8036 ± 0".0046	=	92,876,000 miles -

three independent determinations which agree within the limits of their probable errors. The value found by Sir Spencer Jones from the 1931 opposition of Eros is 8".790 ± 0".001, while that determined at the 1901 opposition of Eros was 8".807 ± .003.

It is only by inspecting the Cape annals that one can appreciate the vast labour this undertaking has involved. Everything depended upon the exact position in space of the observer at the time of making the observations. And his position is affected by (1) the rotation of the earth, (2) its course round the sun affected by planetary perturbations and (3) by the same as affected by the moon's attraction. It is a striking commentary on the precision of the investigations that Gill was able to detect periodical irregularities in his results due to the accepted mass of the moon being wrong. It was only by choosing a new value for the moon's mass that their irregularities were eliminated. Thus by three months of observations on Victoria with the extraordinary exactness of his methods he enabled us to measure the deflection of the earth in her orbit by the moon more accurately than could be done by all the solar observations of a century collecter by Le Verrier for use in computing his table.

------oOo------

Gill's Work on Stellar Parallax with the Heliometer.

by
H.E. Krumm.

It has been said that next to his wife, Gill loved his heliometer, although we are told that this lady never really became jealous of the instrument. In one of her letters Lady Gill remarks, "When David comes in after a night's work with the heliometer he is just daft, laughing and joking. He was the same with the telescope in his father's garden when we were first married. So it was at Dun Echt and Ascension and so it will be as long as his eye can look through a telescope".

Gill's observations of Juno and Mauritius convinced him of the value of the heliometer as an instrument of research. Despite the many peculiar difficulties associated with its use, Gill produced results which are remarkable for their accuracy. At the present day it is natural to prefer photographic methods which give superior accuracy whilst making far less demands on the observer. Gill's success with the heliometer never blinded him to the advantages of the long focus refractor and he fully shared the modern tendency to depend more and more on the photographic plate. The heliometer, however, does possess one advantage over the astronomical camera, both for the determination of stellar and solar parallaxes, and on which Gill always strongly insisted - the heliometer measures are independent of the colour of the object under observation. He maintained and confirmed by experiment, that the skilled observer in making coincidences of the images matches the colours and not the most intense points of the minute spectrum caused by atmospheric dispersion.

As early as 1872, while still an amateur astronomer, Gill had begun to plan a series of observations of stellar parallax with a micrometer attached to a reflector - an investigation which was interrupted by his removal to Dun Echt. Determined to carry on with these investigations, he brought a 4-inch heliometer with him when he came to the Cape. This instrument was an old friend for he had used it in Lord Crawford's expedition to Mauritius in 1874 and had also made his observations of Mars with it at Ascension in 1877. He knew he could use it effectively in stellar parallax observations and acquired it from Lord Crawford for this purpose. In this work he was assisted by a volunteer observer in the person of Dr Elkin who joined him in 1881. Their programme of nine stars included Sirius, Canopus, Alpha and Beta Centauri and others of exceptionally large proper motion. These stars were judiciously divided between the two observers so that each had six on his list. The comparison stars were chosen with great care and in the three stars common to the two lists each observer had his special comparison stars so that the observations may be considered as entirely independent.

The results were valuable, both in their bearing on the exact solution of the problem undertaken and by the effects produced by their attainment, for immediately after completion of the work, Gill represented to the Admiralty that continued research on stellar parallax and the determination of the solar parallax were much to be desired. Gill got his way for in 1887 the Lords Commissioners sanctioned the construction of a 7-inch instrument at a cost of £2200. Regular observing with the new instrument was begun in January 1888. With this, Gill and Finlay, his assistant, and later, Professor de Sitter of Leyden, successfully completed during the ensuing four years an astonsihing programme of observations. It included -

(1) The complete determination of the constants and errors of the heliometer (scale value, errors of the micrometer screw, of the scale divisions etc., involving nine months labour).
(2) Observations of parallax of 22 stars.
(3) Observations on minor planets for stellar parallax.
(4) Observations of Jupiter's satellites.

The three observers measured together 12 bright stars and 10 stars of large proper motion. Of the 32 distinct determinations, Gill was responsible for 18, Elkin for 7, Finlay 3 and de Sitter 4.

The results, which are summarised in vol 7 of the Annals of the Cape Observatory, were of great interest, especially in establishing the remotemess and intense luminosity of some of the brightest stars such as Canopus and Rigel. The results also supported the view which had gradually formed during the preceeding years that large proper motion was a safer criterion of the proximity of a star to us than brightness. By the work of Kapteyn and Newcomb, astronomers had been shown how much emphasis is to be laid on the probability that stars differ enormously in actual luminosity. This point is beautifully illustrated by the tables which Gill drew up. It must be remembered, he points out, that the derived parallaxes are differential or apparent, not absolute; for we are not at liberty to assume that the comparison stars are infinitely remote. The only legitimate procedure is to deal with limiting values which can be obtained by adopting different hypotheses as to the absolute parallax of the comparison stars. Gill accordingly gave tables exhibiting the variation of the total light radited by each of his parallax stars (in terms of the sun's light), with different hypothetical parallaxes of the comparison stars, ranging from 0."00 to 0."05. In this way he was able to show that the stars whose parallaxes he had determined would differ in brightness by about 12-15 magnitudes if they were all removed to the same distance from the sun.

Sir Arthur Eddington, speaking at the Annual General Meeting of the R.A.S. in February 1915, shortly after Gill's death, said of his parallax measurements: "Whenever they have been put to the test, Gill's values have always been confirmed. Spurious parallaxes are a great bane in stellar investigation, and, at least, until recently, few observers have escaped an occasional bad error; but Gill's parallaxes can always be relied upon. His general accuracy has been equalled, perhaps a little surpassed, bu some modern photographic determinations; but when we compare the sizes of the instruments - the 40-inch telescope at Yerkes, or the 26-inch at Greenwich, with his 7-inch heliometer - we must marvel at the precision he could obtain.

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The Pattern in the Night Sky as seen from "Canterbury", Devondale, C.P.

by
Dr M. N. Fysh

We have had unusually heavy rains this year, a total of more than seven inches during April alone. We are at an altitude of 4129 ft above sea-level, 20 miles from the nearest town, and 15 miles from the nearest meain road, which runs between Mafeking and Vryburg.

We are surrounded by the open veldt, and there is an uninterrupted view of the sky all round from zenith to horizon.

The only buildings are those of low and very small farm-houses scattered very widely from each other, and mostly sheltered amongst trees and bushes.

A single line of railway runs past this farm, and a train goes by every few hours, but none during the night as a rule between 10 p.m. and 4 a.m.

There are no search lights within hundreds of miles, and traffic may be said to be absent, except for donkey and occasional horse-drawn primitive vehicles, and now and then a car, but very seldom at night.

Thus our atmosphere is most wonderfully clear, and free from the pollution inseparable from a town and neighbourhood.

The old name for this district was "Stellaland", and the name of the Vryburg weekly newspaper is "The Stellalander". There is very good reason for calling the place "Star Country", as I will try to show.

The following is an attempt to put on record something of the wonderful appearances seen during this year so far. I realise its utter inadequacy, but as there is no one else to describe it I must do my best.

Every evening, a few minutes after the first bright stars have shone out, there appears a pattern in the sky, a kind of mosaic. It is seen at first overhead, about the zenith, then as darkness deepens it spreads rapidly, until it fills the whole heaven from horizon to horizon. The pattern is like the mottling seen on the photosphere of the sun, but the structure seems to be much finer and smaller. It is smaller and very closely arranged overhead, and larger and more spaced out towards and at the horizon, just as happens in the case of the constellations. It appears as a kind of elusive lacy pattern with crenated edges, but there is no definite continuity between the parts, which maintain their relation to each other without visible connection. I say "elusive", because as one gazes it sometimes seems to melt and vanish, to reappear immediately to indirect vision as one looks away. Not that the whole of it even vanishes like that, only the small patch on which one fixes one's gaze.

Is there any colouring? Yes indeed, but here again I must use the word "elusive". At first it is always a very delicate rose or shell pink against the blue of the evening sky. This fades later as the zodiacal light appears, to a soft pearly colour, then to violet grey. Later still, as the night advances, it may rose again or red against the very dark blue of the night sky. As one looks however, the pattern either slowly or rapidly fades out before soft, misty, ghostly white lights, which spring up round the horizon and draw a veil over it. This veil may be, and often is so thin and diaphanous as not to interfere with the shining of even the smallest stars, yet it may be so thick as to hide the light of many of them. These lights come and go with some regularity, as if in facr some pulsation were going on at their source; but more and more continuous observations are needed to establish whether this is so or not. The lights correspond closely with those described by Halley as seen by him in 1716. (See Occasional Notes, R.A.S. October, 1938.) As one watches, the veil of light seems to approach, preceded by cold puffs of wind, as if the light were driving the air before it.

If one asks how such a thing can be, one has to remember that what one sees must be something with substance, light borne or reflected by something, in this case probably exceedingly thin vapour, and that vapour highly charged with a power which we know as electricity.

Moreover, accompanying this phenomenon, I have sometimes noticed a curious feeling in the air as if there were in it an unwonted element making it less easy to breathe, but this again needs more observation.

Is the pattern seen when the moon is present in the sky? Yes, certainly, and it is visible almost up to the moon's disc before being drowned in its light, indeed I have seen it is its greatest beauty when the half moon has been shining most brightly high in the sky.

However, its visibility does seem to vary with the position of the moon, but more observation is needed there, as other factors may come in.

One night at 3 a.m. it was invisible, though the sky was seemingly clear, and the stars very bright and numerous. The sky had a kind of violet luminosity, and I could see to read heavy news print (letters 5/8-inch). Orion had just risen, and was well clear of the horizon, and Mars and Saturn were both very bright, though I do not think they made much difference. I wondered why it was so light with no moon, which had set many hours before. I think there must have been an exceedingly fine layer of vapour at a great height charged throughout with static electricity.

The pattern described remains always the same itself in structure, and apparently also in height or distance. It never seems to come nearer or recede farther. It seems to be at a height which is close to the limit of vision, as some people cannot see it; or perhaps it is that they are not interested enough to give the necessary attention to the matter. The pattern is sometimes so clear as to stand out stereoscopically as it were, and sometiies it is so faint as to be scarcely discernible. But these changes are not in the pattern itself, but are evidently due to intervening light or vapour.

I may mention that there is a very small pumping plant near Devondale Siding about a mile away. Sometimes when this is at work it sends out a small column of black smoke, which spreads out far and wide till it disappears. Maybe this has something to do with the visibility of th pattern in the sky.

As to clouds; with heavy ones about one can see the pattern at times right up to their edges. Again, with lighter clouds it may be quite hidden.

As the particular phenomenon described does not seem to have been thoroughly observed before owing to the conditions under which observers have had to work, it is to be hoped that some of our members living out in the highlands of this wonderful country will be able to pursue the subject, and record new facts, so leading us nearer to an understanding of its nature and perhaps its function.

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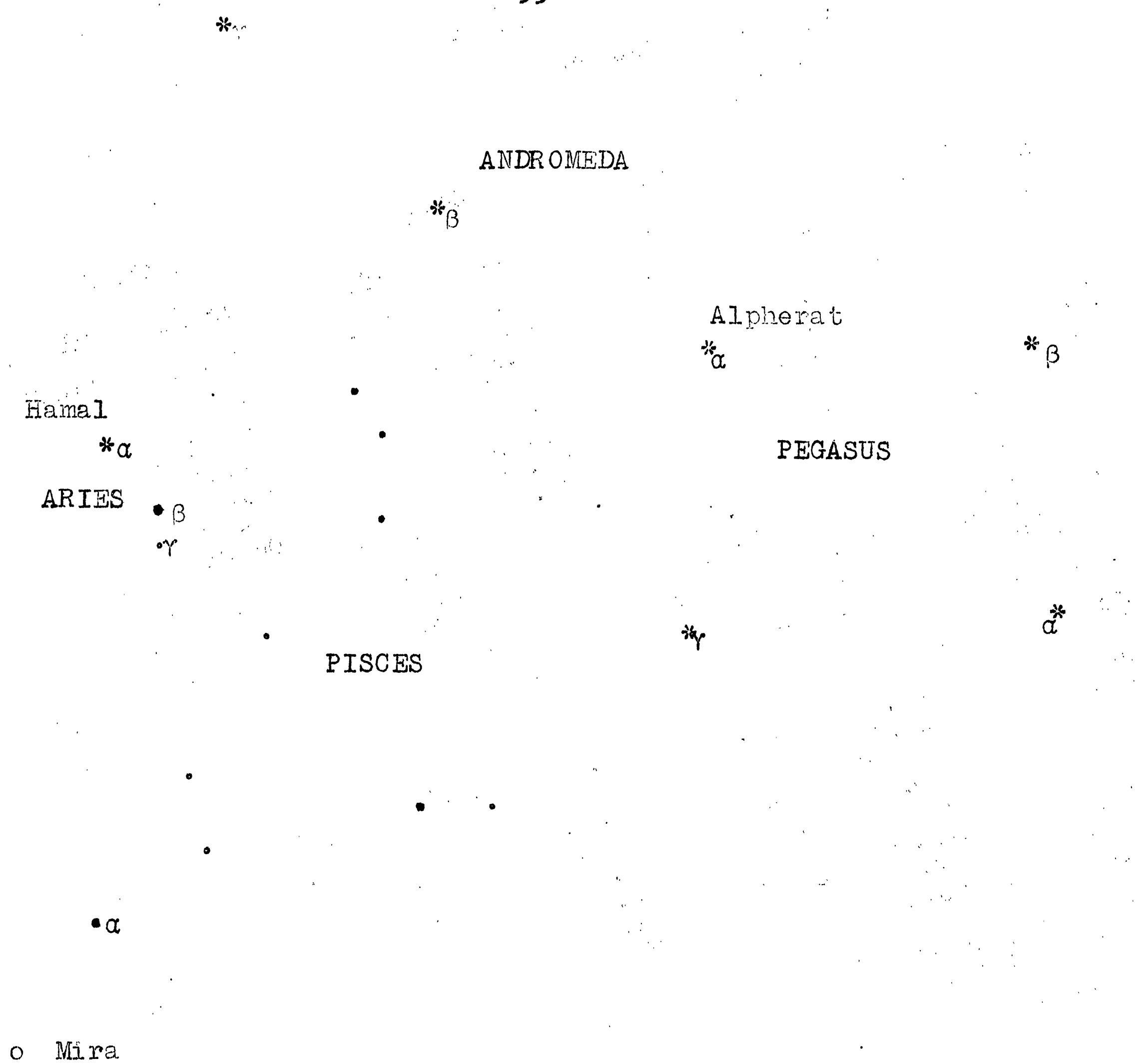
THE BEGINNER'S PAGE.
October, 1943.

by
Dr M. N. Fysh.

Last month on looking north at 9.00 p.m., we saw the bright star Altair in Aquila straight ahead and about half way between the horizon and zenith. This month at the same time it is not to be seen there, for the Eagle is flying westward month by month, till by December he disappears from view below our western horizon. It will be most interesting to follow his movements and that of other constellations, and look for their reappearance in the East. We might also watch for the rising and setting of the brightest stars, a beautiful sight in the clear air of the high veld. What is the reason for these changes? Let us follow the Eagle through the night. He moves, and by about 2 a.m. he is gone. The other stars move also, and beautiful Vega is setting already. This of course is due to the turning of our Earth on its axis, while the monthly change is caused by our journey round the Sun. Thus we can see for ourselves that the Earth has two movements, one round and round on itself, and the other forward round the Sun, both at immense speed. There are yet other movements, of the deepest interest, which must be considered later. It will be well perhaps to look back a long way in history, and see how these stupendous wonders, commonplaces alas, to most of us, were first found out.

But to go back to the north. We have a still better view of Pegasus this month, his nose and forefeet being straight ahead, and the great and splendid Square well up behind. Cygnus, the Swan, containing the great "Northern Cross", as it is sometimes called, with Deneb at its head, is now low down in the N.N.W., and will soon be out of sight. Turning east, we can see the large constellation of Cetus, the Whale, towards the tail end of which is heading in V formation a swarm of small "fish with glittering scales", as the old rhyme has it, namely the constellation Pisces, one of the twelve signs of the Zodiac, about which more later. The Whale is interesting chiefly by reason of one of its stars called Mira, the Wonderful, because of its variability. It was noticed first in 1596 by an observer named Fabricius who saw a bright star in the tail end of Cetus, which he had not seen before. It was then of about the 2nd magnitude. As he watched it from day to day it grew fainter, till it vanished from sight. Continuing to watch the sky, he yet had to wait some years before seeing it again, which he did in 1609.

By putting together observations made since, it has been found that from invisibility to the naked eye Mira grows to its greatest brightness in about 11 months. But it is by no means regular. Sometimes it is so bright as to attract the attention of a careful observer, sometimes even at its brightest it is still quite faint. It has been studied carefully with the largest telescopes, e.g. at Mt Wilson, California, and astronomers have come to the conclusion that it is an enormous giant, being in fact the second largest star known, so that the sun, the earth, the moon, and all the planets might be dropped into it and the difference not noticed. What is the meaning of its changes in brightness? In the case of this particular star we do not know. But as we go on learning more and more of "our mysterious universe", we find that it is all alive with activity, great forces at work pouring out vast streams of light, heat, electricity, magnetism, and without doubt other evidences of a mighty Power of which as yet we know nothing. But within ourselves we have the wonderful power of learning and intelligence, and by continuing to observe and note with care and accuracy all we can, we may contribute our share, however small, to that marvellous store of knowledge and enlightenment which has been gathered together by the genius of spirit and infinitely painstaking work of astronomers throughout the ages even since before Job said "He hangeth the Earth upon nothing".



Perhaps the easiest way of locating Myra is by means of the Great Square of Pegasus, since it lies on the extension of one of the diagonals of that square, the one joining β and γ. It is about twice as far from γ as γ is from β.

It will be noticed that Alpherat, the star at the north-east corner of the Suare of Pegasus, does not belong to Pegasus at all but is α Andromedae . The Great Nebula in Andromeda which can be faintly seen with field glasses will be found close to the 'R' in ANDROMEDA.

An interesting constellation in the same part of the sky is Aries, the Ram .... the first sign of the Zodiac. In the old days, the First Point of Aries, the point at which the Sun crosses the equator at the Spring Equinox, used to lie in this constellation but precession has carried this point back into Pisces, the last of the twelve signs of the Zodiac. Aries is supposed to be the Ram on whose back Phrixus and his sister Helle fled to Colchis to escape the wrath of their stepmother Ino. It will be recalled that on the way Helle fell off into the sea and was drowned. The place where she fell off is now called the Hellespont. Hamal, the name of the brightest star is supposed to have come from the Arabic word for sheep.

NOTE: **Mira is invisible to the naked eye at present, being between magnitudes 7 and 8. A good pair of field-glasses should pick it up quite easily.**

THE SKY OCTOBER 1943

(South African Summer Time is used throughout)

The Sun and Planets

Cape Town	Oct. 1 Rises	Oct. 1 Sets	Oct.11 Rises	Oct.11 Sets	Oct.21 Rises	Oct.21 Sets
Sun	07.25	19.48	07.12	19.55	06.59	20.03
Mercury	06.53		06.32		06.32	
Venus	05.38		05.15		04.58	
Mars	01.17		00.48		00.17	
Jupiter	05.19		04.45		04.10	
Saturn	01.56		01.17		00.33	
Uranus	00.34		23.54		23.13	
Neptune	07.18		06.39		06.01	

	Oct. 1	Oct.11	Oct.21
Sum. Time of Noon	13.36	13.33	13.31
Sid. Time at 24h.	22.53	23.32	00.12
Equ. Time at Noon	10^m03^s	13^m01^s	15^m12^s
Jul. Date at 15h.	2430999.0	2431009.0	2431019.0

Johannesburg

Johannesburg	Oct. 1 Rises	Oct. 1 Sets	Oct.11 Rises	Oct.11 Sets	Oct.21 Rises	Oct.21 Sets
Sun	06.49	19.08	06.39	19.12	06.28	19.18
Mercury	06.13		05.52		06.57	
Venus	04.57		04.34		04.17	
Mars	00.22		23.52		23.21	
Jupiter	04.30		03.56		03.21	
Saturn	01.01		00.22		23.38	
Uranus	23.39		22.59		22.18	
Neptune	06.40		06.01		05.23	

	Oct. 1	Oct.11	Oct.21
Sum. Time of Noon	12.58	12.55	12.53
Sid. Time at 24h.	23.31	00.10	00.50

Durban

Durban	Oct. 1 Rises	Oct. 1 Sets	Oct.11 Rises	Oct.11 Sets	Oct.21 Rises	Oct.21 Sets
Sun	06.35	18.58	06.24	19.03	06.12	19.10
Mercury	06.02		05.42		05.42	
Venus	04.47		04.24		04.07	
Mars	00.19		23.50		23.19	
Jupiter	04.24		03.50		03.15	
Saturn	00.58		00.19		23.35	
Uranus	23.36		22.56		22.15	
Neptune	06.28		05.49		05.11	

	Oct. 1	Oct.11	Oct.21
Sum. Time of Noon	12.46	12.43	12.41
Sid. Time at 24h.	23.43	00.22	01.02

The Moon

First Quarter	Oct. 6	23^h10^m
Full Moon	13	16 23
Last Quarter	21	04 42
New Moon	29	04 59

Perigee	Oct.10	(226,900 miles)
Apogee	22	(251,300 miles)

The Moon will be in conjunction with:-

Mars	Oct.18	Moon 4°S.
Saturn	18	2°S.
Jupiter	Oct.23	Moon $0^\circ_{.}6$N.
Venus	25	4° N.

ASTRONOMICAL SOCIETY OF SOUTH AFRICA.

MONTHLY NOTES Vol. II No. 11.

Editor: H.E. Krumm, F.R.A.S.

Leeuwendal Crescent,
Cape Town.

1943 October 25.

Editor's Remarks:

We were pleased to welcome Dr Redman of the Radcliffe Observatory, Pretoria, to the October meeting of the Society. His address, which took the place of the subject advertised in last month's Notes, dealt with some astronomical observations which Dr Redman consdiered might be more advantageously made from aircraft than from observatories situated on the Earth's surface. The subject apparently appealed to the imagination of the members present as quite a lively speculative discussion followed the conclusion of the paper.

Readers will doubtless remember Mr Hirst's communication to the April number of the Monthly Notes, Volume II, No 5 page 32, dealing with the Stellar System Burnham 208. A preliminary investigation of the measures made since its discovery as a double star by Burnham in 1874, suggested the possibility of one of the components itself being double, being accompanied by an invisible companion with a period of about 40 years. Mr Hirst stressed the preliminary nature of his investigations but mentioned that a detailed study of the measures had been started which he hoped would lead to more detailed information. This latter investigation has now been completed and the methods employed and the results obtained are published in this month's issue. The mass arrived at for the invisible component makes it definitely a star with an absolute magnitude of at least 15 and an apparent magnitude of about 16. There is no hope of its being seen as it is much too close to the 5th magnitude primary. The method of using the parallax for deciding between the various orbits is ingenious. We believe it was first used by Fletcher in his work on 61 Cygni.

The Librarian confidently expects that by continued advertising, the "The Glass Giant of Palomar", will eventually be returned to the Library. He would like to remind members of the latest additions to the Library viz: "The Story of Astronomy" by well-known lecturers at the Hayden Planetarium, New York, and "The Birth and Death of the Sun" by George Gamow; two books well worth the attention of members.

Cape Centre News:

The next meeting of the Society will be held at the Royal Observatory on Wednesday, November 17th, 1943 at 8.15 p.m. The subject for discussion will be "The Light of the Night Sky".

We regret to have to inform members that the nature of Mr Sconegevels illness has necessitated his removal to hospital where he has had to undergo an operation. We are, however, pleased to report that he is making satisfactory progress and that it should not be too long before he is allowed to return to his home.

There will be a Committee meeting on Wednesday, November 17th, 1943 at 7.45 p.m. --- immediately preceding the open meeting .