

## MAY LECTURE - A METEORITE ODYSSEY

Our May speaker, Dr. Edward P. Henderson of the Smithsonian Institution, described his adventurous expeditions to Australia in search of tektites and meteorites. He and his assistants spent many months traveling and living in a Land Rover throughout the "outback" of New South Wales and South Australia while hunting for these rare and unusual stones. Meteorites certainly come from space, and there is no doubt in Dr. Henderson's mind that tektites have spent some time during their existence in space as evidenced by their complete lack of dissolved gases. Dr. Henderson believes that these strange black stones with ablation flanges are considerably younger than the millions of years old that some scientists claim. A sharp-eyed, trained scientist can discover tektites just lying on top of the sandy soil in the remote and deserted interior of the great southern continent.

A number of meteorites ranging in size from a few ounces to several hundred pounds were found on Henderson expeditions. His group also discovered many meteorite craters or suspected craters. All of this work was conducted with the full knowledge and cooperation of the local Australian government and scientists, and Dr. Henderson had no difficulty in returning home with as many specimens as he desired. - Leith Holloway

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## JUNIOR DIVISION NEWS

At the May General Meeting of the Junior Division, members elected the following officers:

President: Bill Bruck  
Vice President: Sam Bacasse  
Secretary-Treasurer: Jim Crowley

Bill has launched his new administration with promises for greater publicity for junior activities and for revised Junior Division By-Laws. He will present his proposed amendments for ratification at the Special Meeting of the Division before the NCA lecture meeting in June.

- Leith Holloway

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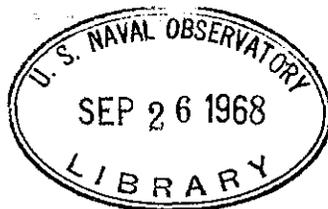
## MIDDLE EAST REGIONAL CONVENTION

This year the convention will be held in Pittsburgh on June 14, 15, and 16. The activities planned include a trip to Allegheny Observatory, a banquet with a talk by Dr. N.E. Wagan, Director of Allegheny Observatory and a trip to Dorseyville to see the new observatory and its 21 1/2" reflector.

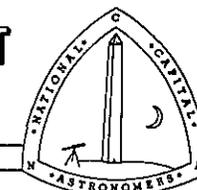
For further information, contact G.R. Wright.



Library,  
Naval Observatory  
Washington 25, D.C.



## ★ STARDUST



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## MAGNETIC STARS

Our guest speaker for June will be Dr. Robert C. Cameron, who is an astronomer with the Laboratory for Theoretical Studies, NASA Goddard Space Flight Center. Dr. Cameron holds a B.S.E.E. from Purdue University, and an A.M. from Indiana University and Ph.D. from Georgetown University, in astronomy. He worked in celestial mechanics and positional astronomy, at Georgetown and the Naval Observatory. During I.G.Y., he was Station Chief of the S.A.O. optical tracking station in Olifantsfontein, South Africa. After joining NASA, his interests shifted to stellar evolution, and to magnetic stars, which is the topic selected for his talk.

A bit of background material is mentioned here, which it is hoped, will lead logically into Dr. Cameron's discussion by describing observational technique for studying magnetic fields in stars, and in describing the physical principle by which magnetic fields become observable.

In 1946, an important astronomical discovery was made by Dr. Babcock with the 100 inch spectrograph at Mt. Wilson. The Ap star 78 Virginis was found to have a magnetic field--the first one to be observed in any star other than our own sun. To this first discovery was soon added a list of others, some stars having fields as strong as 38,000 gauss. (By comparison, the earth's is only about half a gauss).

The detection of magnetic fields takes advantage of a well-known effect in spectroscopy: the Zeeman effect. If we use a laboratory spectrograph, one with high dispersion, to photograph the absorption spectrum of some sample, an isolated line of that sample might resemble the sketch in Fig. (a). If now, we apply a strong magnetic field, the direction of which runs perpendicular to our line of sight, we will then find the line has split into three components, as in (b). Suppose we were to line up our spectroscope so that it was looking parallel to the lines of force of the magnet. Then we would see only two lines (c). It also happens that the line on the right (let us say, -- (Cont'd.p.2)

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## CALENDAR

- JUNE 1.... DINNER WITH THE SPEAKER at 6:15 P.M. Bassin's at the corner of 14th and Pennsylvania Ave., N.W. Call Jerry Hudson at 948-2809 to make reservations.
- 1.... MAGNETIC STARS at 8:15 P.M. at the Dept. of Commerce Auditorium. Important business meeting and election of officers to follow.
- 1.... SPECIAL MEETING OF JUNIOR DIVISION at 7:15 P.M. in the Dept. of Commerce Auditorium. Agenda: Amendment of the Junior Division By-Laws. All Juniors are urged to attend.
- 8.... MD-DC JUNIORS MEETING at 2 P.M. at Chevy Chase Library, 8005 Connecticut Ave., Chevy Chase, Md. Program to be announced.
- 4,11,18,25 TELESCOPE MAKING CLASS at the Chevy Chase Community Center at 7:30 with Hoy Walls.

MAGNETIC STARS-Cont'd.  
toward the red) will consist entirely of right circularly-polarized light. If we placed a quarter-wave plate in front of our apparatus, followed by a polarizer, we would find that, by rotation of the polarizer, we can make either line fade completely out. If instead we used some birefringent material behind the 1/4 wave plate, say a calcite block, it would give us two spectra: one in right-and another in left-circularly-polarized light. One of the pair would now be in one spectrum (let us say, the calcite block was placed so as to shift right circularly-polarized light upward; left downward), the other would be in the lower spectrum. We have just equipped our spectrograph to go hunting for magnetic stars.



Our first try is apt to be a disappointment. Many things are happening in stars to confuse the simple picture in the laboratory. If our star is rotating at a suitable velocity, the approaching and receding components from opposite limbs will cause a further splitting of the two Zeeman lines (actually more of a smearing than a splitting). Fig. (d) and (e) show the appearance of the right-and left-circularly-polarized spectra, respectively, when the fields and directions of motion line up (so as to cause the two right-c.p. lines to overlap). This commonly occurs in real life, and is known as "positive crossover." This provides one of the clues for deciphering spectra of magnetic stars.

- Jerry Hudson

ELECTION OF OFFICERS

The following slate of officers for 1968-69 was presented at the May Meeting:

- President .....
- Vice President .....William Winkler
- Treasurer .....Jerome Schnall
- Secretary .....Mrs. Nora Keel
- Trustee .....Sterling Anderson

It is most important that you attend the June meeting and help the NCA by nominating a president and voting on the slate of officers. Your opinions are needed.

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SCIENCE FAIR WINNERS

No educational chairman was appointed this year, therefore no one was asked to judge the fairs, therefore we have no winners to announce or invite to our meeting.

(Editorial Note)...Giving help and encouragement to young people interested in astronomy should be an important activity in an organization like NCA. Why are we failing in this respect? Doesn't anyone care?

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NEW MEMBERS

- REGULAR
- W.J. Dorian  
1630 R.St. N.W.  
Washington, D. C. 20009
- Bertram K. Ellis  
3524 A. St.S.E.  
Washington, D. C. 20019
- Robert Heppe  
9309 St. Marks Place  
Fairfax, Virginia 22030

- JUNIOR
- Steve Johnson  
4257 Dogwood Lane  
Andrews Air Force Base, Md. 20311
- George Lake  
1451 Wasp Lane  
McLean, Virginia 22101
- John J. Reagan  
1601 Holly Court  
McLean, Virginia

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JUNIOR BIOGRAPHY



Mike Jewell

Outgoing President of the Junior Division, Mike Jewell, joined the NCA in November 1964 after being introduced to the society by Sky and Telescope and Margaret Noble. He is a senior at Surattsville High School and next year will major in physics at Georgia Tech. For over a year Mike has been doing a great job on photo-copying Star Dust for the printers, and last July he presented a paper entitled, "Astrophotography", at the National Meeting of the Astronomical League. He is an active member of the Prince Georges County Juniors. His other hobbies include track, conventional photography, and coin collecting.

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STARDUST NEEDS HELP ... During the past year, Mike Jewell has done an excellent job with the photocopy work on Stardust, however, Mike is leaving for College this fall and will be unable to continue this work. If we do not have a member to do this work, the cost of producing Stardust would be too great. If you have an interest in photography, you might enjoy doing this photocopying. If you can help NCA in this capacity, please contact the editor or the president. It is important that we find someone before Mike leaves in order that he may explain the process to them.