AMATEUR ASTRONOMER'S ASSOCIATION OF PRINCETON

The Sidereal Times

Director: ~~Barry Hancock~~ Editor: Roxanne Tobin

Member of the Astronomical League

vol.1 no.5

June, 1972

The next meeting of the Amateur Astronomer's Association of Princeton will be held on Tuesday, June 13, 1972, at 8:00 p.m. in Room A-07 of Princeton University's Jadwin Hall (in the Physics Department). Our speaker will be Mr. Douglas O. Richstone, a graduate student in the Astrophysical Sciences Department of Princeton University. Mr. Richstone's topic will be:

"Extra-galactic Astronomy"

We plan to entertain the speaker before the meeting at the Holiday Inn dining room on Route 1 in Plainsboro. No reservations are necessary, but be sure to meet us in the lobby of the Holiday Inn promptly at 6:15 p.m.

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The Study Group has its' next meeting on June 16, 1972, at Duncan Planetarium. Mr. George Parker will be the speaker on Chapter 15, entitled "The Minor Planets". The Group meets at 8:00 p.m. Anyone can attend these meetings, and everyone is invited. The Study Group was formed so that members can take turns teaching themselves chapters in "Exploration of the Universe" by George Abell.

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The Astrophotography/Observation Group has its' next meeting on the Friday after the Study Group, June 23, 1972, at Karl Koehler's home observatory located on 13 Shady Lane in Bordentown. Hopefully, they will have a clear night.

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The page numbered "C" was left out of last month's issue of Sidereal Times. It should have been page 3 of the paper on Early Science.

CDR. RICHEY NOW RECOVERING AT HOME

Cdr Joseph L Richey, a long-time active member of the AAAP, former program chairman, chairman of the nominating committee, and study group leader, suffered two heart attacks within a month during May. Fine treatment at Walson Hospital, Ft. Dix, has enabled him to return home at the beginning of June for extended rest. We are happy to report that he is as interested in his environment as always; he gave a detailed report on all the technological devices used in his treatment. He tires very easily, however, and must avoid all but the most mild activity. It will probably be quite some time before we are able to have him attend our meetings once more. Notes and brief phone calls will undoubtedly enliven his recovery.

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"SUN STROKE" by Steve Merillat, Star Gazer's Journal, Willingboro AS, May 1972

The prolonged absence of the sun one August in England prompted this letter from Peter Chapman to the London Times:

"It may interest your readers to know that, on the morning of August 2, I saw a small area of blue sky which became visible for a few minutes over Metropolitan Tabernacle in that part of London known as the Clefont and the Castle. Several of my acquaintances were witnesses to this phenomenon and I should be interested to know whether similar sightings were made in other parts of the Metropolis."

Three days later, P HH Moore replied:

"The small area of bluesky that Peter Chapman saw last Friday over London is known as English Summer. It is a curious meteorological phenomenon as it rarely lasts for more than just a few minutes."

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AWARDS FOR POPULAR ESSAYS IN ASTRONOMY, ASTROPHYSICS AND SPACE SCIENCE, Sponsored by the Judy A. Seydoux Memorial Fund.

The Griffith Observatory, in the interest of stimulating the flow of information between scientists and the lay public, proudly announces the offering of 9 awards for the best essays on astronomy and closely related fields. The stipulations follow:

1. Awards will be made on 1 November 1972 for the best essays written for the general public on topics of current or historical interest in astronomy, astrophysics and space science.
2. Essays must be submitted typewritten, in English, double spaced, with a brief biographical sketch of the author. Diagrams and graphs should be inked. A suggested length of the essays is between 10 and 15 pages.
3. The cash amount of the awards are: First Prize, $250.00; Second Prize, $100.00; Third Prize, $50.00; Fourth Prize, $25.00; five Honorable Mentions, each $10.00.
4. All essays must be received before 1 September 1972. The contest is open to all interested persons (Griffith Observatory personnel excepted).
5. The essays submitted become property of the Griffith Observatory and will not be returned. All winning essays will be published in the "Griffith Observer".
6. The decision of the judges is final.
7. Address all essays to: Essay Awards Committee, Seydoux Memorial Fund
   c/o Griffith Observatory
   P. O. Box 27787
   Los Angeles, California 90027

THE BRUNO GOSZKA OBSERVATORY STAR PARTY

14 members of the AAAP met on 5 May at Bruno Goszka's Observatory in Somerville. Members were treated to such Messier objects as M67, M44, M51 (which was a truly magnificent sight); M64, and M13. Seeing was very good that night -- about 9.0 on a 10-point scale. M13, the great globular cluster in Hercules, was resolved clearly from one edge of the field to the other. Also in use was a 6" richest-field telescope, unmounted, which people observed through while waiting for the 20" homemade Newtonian to change to a different object. Those who have been thrilled by the light-grasp of the 9" Clark on Peyton Hall and George Parker's 10" Newtonian will be enthralled by the seeing through the 20" that Mr. Goszka made. He invites AAAP members cordially to return to his home any time for some more observing. Located just half an hour's drive north of Princeton, he lives at 716 Rt. 202, a couple miles west of the Somerville circle, intersection of US 206.

Those attending on 5 May were: Mike Clark, Dave Apgar, Holt Apgar, Rob Gordenker, Steve Shutt, Norm Sperling, Roxanne Tobin, John Tobin, Edward Tobin, Julius Ziemba, Henry Ziemba, Don Field, John Church, Mark Stratton, Karl Koehler; and from STAR in Eatontown, NJ: Kay Sears, Tom Fetterman, Richard Huber and Jerry Brewer.

To arrange your own session at the Goszka observatory, contact either Mr. Goszka or Mike Clark.

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Jupiter, largest of the planets, can be seen rising at Midnight this month. Located in Saggitarius, it dominates the southern horizon until morning. Members can take this time to observe the changing of the belts, the satellites, and, most important of all, the Great Red Spot, which is quite prominent this month. Willingboro Astronomical Society reports that on 12 May, the Red Spot appeared to be slightly tilted. Any observations made by members should be sent to your editor, or to the WAS, which has a project on Jupiter observations going. Members should note the color changes and size of the belts which usually occurs at the time of a disturbance. Notice of the color, size, shape, and location, as well as other prominent features about the Red Spot would also be of great importance. Watching the satellites can be very enjoyable, and many publications announce eclipses of the four moons, as well as many other things of general interest. Send your drawings and observations to:

Nevin J. Templin, Editor
Star Gazer's Journal (WAS)
P OBox 605
Willingboro, NJ 08046

Roxanne Tobin, Editor
Sidereal Times (AAAP)
9, 36 Gardenview Tce
Hightstown, NJ 08520

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Can you unscramble these astronomical terms ? (If you thought last month was hard, wait till you try these!)

rsdeilea	colaticnout	sltiatesel
hrsogaoptroyahpt	beivnlulea	atpxnle
eplseocet	ctesancvinaiei	
otspopecrsce	khoalbcle	

MEMBERS OF THE AMATEUR ASTRONOMERS ASSOCIATION OF PRINCETON

Elias Abelson, 40 Caldwell Dr, Princeton 08540	924-9143
David Apgar, Cleveland Rd West, RD2, Princeton 08540	466-0139
F Edwin Bellisfield, Jr., 1316 Riverside Ave, Trenton 08618	392-6800
Harold A. Bernhagen, 17 Wendover Rd, Yardley, Pa 19067	215-295-3515
Larry A. Boyer, 214 Fisher Pl, Princeton 08540	452-9215
William F. Brill, R D 1, Skillman, 08558	921-8689
George Bumbera	
Charles Burrill, 76 Battle Rd, Princeton 08540	924-1998
John A. Church, 11 Princeton Pl, Princeton Junction 08550	799-0723
Michael T. Clark, 7 Rogers Circle, Trenton 08610	888-2481
Mrs Cliff Crawford, 8 Piedmont Dr, R D 1, Cranbury 08512	799-1382
Brendan Cuddihee, Nelson Ridge Rd, R D 2, Princeton 08540	466-1940
Mrs Constance Davis, G-16 Millstone River apts, Princeton 08540	452-2444
John Edwards, 2772 Nottingham Way, Trenton 08619	586-1556
Mrs Susan Elliot, Cleveland Circle, Skillman 08558	924-5349
Donald G. Field, Denow Rd, Trenton 08638	896-0940
Doug Fineberg, 33 Woodland Dr, Hightstown 08520	448-7926
Barry Gilligan, 232 Washington Rd, Princeton 08540	452-8842
Robert Gordenker	
Roy Grayzel, Sherwood apts, Bldg5, apt45, W Trenton Av, Morrisville, Pa19067	
Frank Gross, 825 Beatty St, Trenton 08611	695-1573
Barry J Hancock, 241 WilliamSt, Trenton 08610	599-3641
Victor P. Head, 14 Ryan Rd, Cranbury 08512	395-0618
J Leith Holloway, 32 Monroe Rd, Princeton 08540	924-2480
Henry Kalman, 15 Lloyd Ave, Cherry Hill 08034	667-9747
David Kaplan, apt 1010 Yardley Commons, Yardley, Pa 19067	215-493-5614
Karl Koehler, 13 Shady Lane, Bordentown 08505	298-2672
David Larach, 139 Sycamore Rd, Princeton 08540	452-7515
Dr J P Layton, 114 Prospect Ave, Princeton 08540	921-7369
Mrs. Helen Lewis, 14 Edwards Pl, Princeton 08540	921-8742
Derek Lillie, Mountainview Rd, R D 5, Princeton 08540	466-2458
Joseph C Lopez, 2 Currier Way, Trenton 08628	883-5810
C Lance Marshall, 19 Piedmont Dr, RD 1, Cranbury 08512	799-1306
Art & Don Martz, 4 Piedmont Dr, RD 1, Cranbury, 08512	799-1214
Richard Miller, 238 Washington Rd, Princeton 08540	452-8168
Robert Packer, Rt 518, Hopewell 08525	466-1812
George R Parker, Schalks Rd, Plainsboro 08536	799-0424
Richard Peery, RD 1, Box 499-A, Stockton 08559	397-3676
Dr William Phillips, 53 Wilton St, Princeton 08540	921-2732
Kurt R Rahlfs, Honey Brook Dr, R D 2, Princeton 08540	737-1409
Robert Richardson, 11 Concord Pl, Hatboro, Pa 19040	215-675-6618
Cdr Joseph L Richey, North Mill Rd, Princeton Junction 08550	799-0440
William C Ridge, 10 E Crown Terrace, Morrisville, Pa. 19067	215-295-3816
Frank Shallcross, 12 Jeffrey Lane, Princeton Junction 08550	799-0011
Steve Shutt, 24 Keystone Ave, Morrisville, Pa 19067	215-736-1983
Norman Sperling, apt G7, 161 Franklin Cor Rd, Lawrenceville 08648	896-9575
Gilmore L Stitely, Clarksville Rd, Princeton Junction 08550	799-1411
Mark Stratton, 243 State Rd, Princeton 08540	924-1388
Jeff Streed, Oak St, Pennington 08534	737-3597
Ronald Susswein, 1200 Parkside Ave, Trenton	883-6885
RoxanneTobin, apt9, 36 Gardenview Tce, Hightstown, 08520	448-6163
Charles Tynan, 385 W Bridge St, New Hope, Pa 18938	
Timothy Ungrady, 92 Armour Ave, Trenton 08619	587-2385
Henry Ziemba, 1402 Brunswick Ave, Trenton 08638	392-8130

As we well know, the scientific study of the external world goes back as far as written history, but the beginnings of "popularization" of science helped to make almost a different thing of science.

Science, or "natural philosophy", as it was then usually called, developed into an organized and widespread human activity. The experimental method became quite the fashion among groups of people both inside and outside the universities. Among the clergy and the university teachers, the doctors and the gentry, emerged enthusiastic amateurs. Men began to regard it as a mark of culture to patronize science and experiments, too.

The experimental method in the first half of the 17th Century involved a serious financial burden on its practitioners. Later in the century, when the informal gatherings of scientific workers turned into scientific societies, these societies helped to bear the expense of experiments.

> Scientific academies were founded, of which the Royal Society for Improving Natural Knowledge (1662) in England and the Academie des Sciences (1666) in France are early examples. These began publishing scientific journals. The American Philosophical Society of Philadelphia (1743), founded in part through the efforts of Benjamin Franklin, was the first of the New World's counterparts to these learned societies.
>
> Formally through corresponding secretaries of such academies, informally through private correspondence among friends and aquaintances, an international scientific community arose. Members of this body were thus able to be kept informed of experiments and discoveries of other workers and to contribute their own to the general pool. Its first common language was Latin, the language in which Newton's great Philosophiæ Naturalis Pricipia Mathematica (Mathematical Principles of Natural Philosophy) was written.[4]

In these scientific gatherings the work of individual scientists would be checked, their experiments would be repeated and subjected to criticism and their conclusions would become the subject of debate.

The correspondence between scientific workers became significant, particularly that between astronomers, who found it valuable to compare the observations that were made in one place with another.

The publications and the establishment of periodical literature, speeded up still more the communication and collation of scientific results. By the early 18th Century the new advances in science were popularized in books and articles written specially to interest the educated lay public.

It must be realized that the history of technology also plays a large part in the development of the scientific movement. Sometimes there seems to be a curious similarity between the technical needs of the age and the preoccupations of scientific enquirers. One significant thing in the 17th century is the creation of scientific instruments, especially measuring instruments.

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4. Brinton, Christopher and Wolff, op. cit., p.359.

> In the 17th Century the revelation of the intricate structure of nature, especially with the increasing use of the magnifying glass, the telescope and then the microscope, made people greatly interested in the minute subdivision of matter. The new philosophy enabled men to reduce the whole universe to matter and motion. It made possible the explanation of the whole nature in mechanistic terms.[5]

Technologists and craftsmen brought up in a long tradition of manual skills and inventiveness, actually made the achievements of scientists possible. Glassworkers made the lenses without which the advances in astronomy and biology would hardly have been possible. It was the late medieval miners who started the long process which led to geology, mineralogy, and the whole train of the earth sciences. Through the need to pump water from mines, they also initiated one of the lines of thought that led to the steam engine. Dutch pioneers in insurance began to study life expectancies, and thereby contributed to the science of statistics.

From the beginning, modern science has been concerned with getting things made and getting things done.

It is quite obvious that almost every scientific discovery has a long and precarious history. One must be wary in attributing scientific discovery wholly to any one person. Abraham Flexner, director of the famous Institute for Advanced Study at Princeton, poetically expressed this fact in an essay for Harper's Magazine, October 1939: "Science, like the Mississippi, begins in a tiny rivulet in the distant forest. Gradually other streams swell its volume. And the roaring river that bursts the dikes is formed from countless sources."[6]

Galileo, an Italian astronomer and physicist, was the founder of modern experimental science. He daringly demonstrated that a true scientist must test every rule, instead of accepting what somebody else tells him. His discoveries shattered 2000 years of traditions, and earned him a great many enemies.

He was the first person to systematically study the sky through a telescope. As he studied, he began to reject the old theories that said the earth was the center of the universe, with the sun and stars revolving around it. The Copernican Theory, which declares that the sun is the center of our universe, had been condemned by the Church and almost forgotten until Galileo publicly declared that he agreed with it. Because he was a scientist, to whom truth was the most important thing in the world, Galileo openly defied the ruling of the Church and published a book in which he explained his theory in greater detail.

> Today we honor Galileo as a brilliant and courageous scientist who contributed a great deal to mankind. He showed the world that scientists must be free to discard old ideas and accept new ones, and they cannot be bound by superstitions or traditions. As Galileo put it, "Freely to question and freely to answer" must be the aim of all men of science.[7]

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5. Butterfield, ep. cit., p. 134.

6. Abraham Flexner, "The Usefulness of Useful Knowledge", New Highways in College Composition, ed. Homer Andrew Watt, Oscar Cargill and William Charvat Prentice-Hall, Inc., NY, 1939, p. 697.

7. Jean Bethell, Famous Scientists, Wonder Books, NY, 1964, p. 14.

RECENT JOURNAL ARTICLES REVIEWED BY JOHN CHURCH FOR SIDEREAL TIMES

"The Psychophysics of Twilight -- It's Always Darkest Before the Dawn", Optical Spectra, April 1972, p 35.

In this article, the often-noted phenomenon of an apparent increase in the darkness of night, accompanied by a distinct feeling of uneasiness, a short time before dawn, is examined. The author's opinion is that this is due to the fact that a small portion of the eastern sky is light enough at this time so that when we look at it we temporarily lose our dark adaptation; on re-examining the darker portions of the surroundings, we can see less detail because of this loss of dark adaptation. Frankly, I find this explanation far-fetched. The uneasy feeling could more reasonably be explained as arising from a feeling that it should be lighter than it actually is, because it has been night for so long and it's 4 AM and why the heck doesn't it begin to get a little lighter? Another type of predawn uneasy feeling, quite distinct from the above, is found among persons(?) related to certain branches of the Transylvanian nobility.

"Black Holes", Scientific American, May 1972, p 38, by Roger Penrose.

"Black Holes" are supposedly created when a sufficiently massive star (greater than perhaps three solar masses) comes to the end of its life cycle. It first expands to a red giant, Then it contracts, but instead of stopping at the white dwarf stage (as the sun will probably do) it becomes explosively unstable due to its high mass and becomes, briefly, a supernova. The remaining core, after the supernova has blown off about 90% of its mass, is a neutron star. The electrons have been pushed into the protons due to the exceedingly high gravitational forces, forming neutrons. If the remaining mass is high enough, the neutron star must contract further. The result is a black hole, that exceedingly strange state which was so well expounded at a recent meeting of the AAAP..

Nothing, not even light signals, can escape from the interior of a black hole, because the gravitational effects are so strong. It therefore cannot be seen and there can be only indirect observational data for the actual existence of such strange "bodies". Such evidence could be provided by the detection of an invisible object having a mass too large for a white dwarf or neutron star. There are no known, confirmed black holes other than the one which supposedly existed in Calcutta.

"Satellites at Work", NASA Booklet EP-84, June 1971.

This profusely-illustrated 28-page booklet describes the various satellite programs planned by NASA for the 1970s. There is a very ambitious program in communications, meteorology, geodesy (accurate surveying of the earth), navigation, air traffic control, and earth resources technology. The weather—monitoring satellites (Tiros) and the communications satellites (Intelsat) are the ones in this series most familiar to the general public; everyone has seen the dramatic photos of hurricanes and the live intercontinental television that these satellites have provided. The earth resources technology satellites (ERTS) have great promise for providing large-scale monitoring of many earth-surface processes and phenomena which would not be otherwise obtainable. Examples are identification of insect infestation and disease patterns in agriculture and forestry, estimation of plankton density and fish schools in the ocean, estimation of water resources through snow and frozen water surveys, location of geothermal power resources from surface temperature measurements, and large-scale estimation of air, road, and sea traffic.

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ne occultation listed last month for June 17 will occur the night of June 15, and the ne for June 24 will occur June 23. Let's hope they aren't cloudy nights.

FROM THE NEW DIRECTOR

(7)

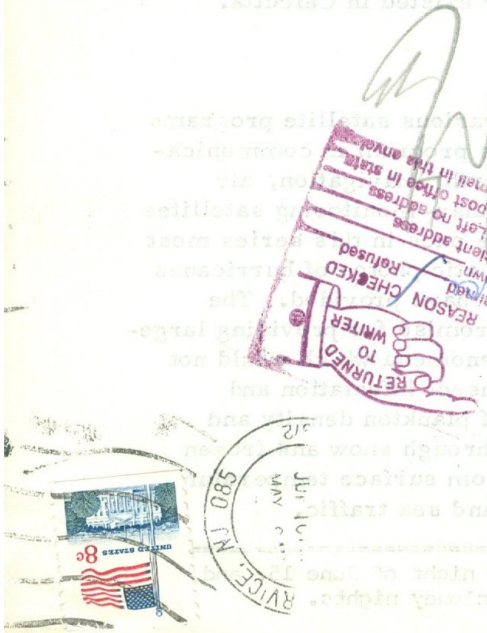
When I joined the AAAP 2 years ago I though I was finally safe. I had held office in 3 other astronomy clubs, but in this one I thought I'd never get elected to anything. That's because I was the speaker at my first club meeting, and spend more than an hour telling you myriads of activities I thought a club like ours should pursue. The activity totalled so much that most members were groaning in disbelief. Anyone remembering that lecture may be surprised to realize that we're already doing half of the things I suggested, and the rest look quite feasible at this point. We've found that having a lot of activities doesn't force anyone to be in more than he wants to be in, so no one can object to others doing their thing. We've found that we can support a good lecture series, AND compile a good newsletter, AND host the best MERAL convention in history, AND organize an eclipse expedition, AND observe more, AND learn more astronomy. The only problem is in deciding to do something. Once we decide to do it, we CAN do it.

Except for one problem. This problem has ruined several astronomy clubs and threatens ours. It has nothing to do with dues, or the size of the membership, or the geographic area we're spread over, or juniors holding office, or seeing conditions, or the availability of speakers, or any other concern usually spoken of.

It's PERSONALITY. There are certain people in the club you'd never ask to be your best friend -- people you'd just as soon avoid.

No project I try, or attempted by your other officers, can be successful if we let ourselves dwell on our petty differences. I'll never be liked by everyone (I doubt you will, either). Some people don't like the way I speak, or the way I dress, or my age or my race, or the school I teach in. Many didn't like the long hair and sideburns I used to have. Many don't like the short hair and goatee I now have. I'm willing to ignore such trivia if you are. We have too much to gain by pursuing our common interest -- astronomy -- to throw it away because someone speaks too loudly or some one never says anything. If you're willing to work on the same thing I'm willing to work on, let's work on it.

LET'S CALL A MORATORIUM ON PERSONALITIES. Come to the next meeting and shake hands with someone you may never like. He'll listen to what you have to say and you'll listen to what he has to say and you'll probably agree. And then you and he and I and the rest of the club can get on with our interest in unravelling the ways of the universe. NS



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Amateur Astronomers Association of Princeton
Duncan Planetarium
Princeton Day School
P. O. Box 75
Princeton, New Jersey 08540

John Church
11 Princeton Place
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Princeton Day School
P. O. Box 75
Princeton, New Jersey 08540

John Church
11 Princeton Place
Princeton Jct, NJ 08550

John Church
11 Princeton Place
Princeton, NJ 08540