News of Science

Southern Hemisphere Observatory

Although that part of the sky south of declination −20° (more than 110° from the north celestial pole) comprises only one-third of the total area of the celestial sphere, this region, nevertheless, is one of crucial importance to the astronomer. Within this region may be found the center of our galaxy, most of the inner spiral arms, most of the globular clusters including the three brightest, the great majority of the known cepheid variables, the richest section of the Milky Way, and our two nearest extragalactic neighbors, the Magellanic Clouds. These critical objects are either invisible or at too low an altitude for effective observations to be possible with the comparatively numerous and more powerful telescopes in the Northern Hemisphere. Astronomers have long been accustomed to seeing diagrams connected with Milky Way research in which data for a third of the galactic circle were nonexistent; it is this sort of thing that has been described as "flying with one wing."

Northern galaxies such as the great nebula in Andromeda, for example, have made it possible for California astronomers not only to formulate the observational criteria necessary to establish the distance scale to the outer regions of the observable universe but also to come up with such fertile suggestions as the existence of two stellar population groups. The Magellanic Clouds, however, are at a tenth the distance of the Andromeda nebula; therefore stars in the two Magellanic Clouds appear to be 100 times brighter than stars of comparable candlepower in the Andromeda nebula. The spectra of the brightest, supergiant Magellanic Cloud stars could be studied in great detail, and much fainter stars, similar to our sun, could be studied by direct photography, if only appropriate telescopic power were available in the Southern Hemisphere.

Basic observational data—so necessary to an understanding of the sidereal universe—lag in some fields or are nonexistent in others in the Southern Hemisphere. For example, the number of known radial velocities north of +20° is 3 times as great as for the stars south of −20°. Furthermore, there is no counterpart of the Lick 20-inch astrographic or the Palomar 48-inch Schmidt surveys in the Southern Hemisphere, although there is no question that southern surveys with similar instruments would yield a rich and profitable harvest. Both the 200-inch reflector and the 48-inch Schmidt at Palomar have been used to make decisive observations concerning the identity and nature of the newly discovered strongest radio sources. The new and somewhat spectacular science of radio astronomy not only does not make such telescopes obsolete; it asks questions that can be answered—if at all—only by the best and largest optical telescopes presently available only in the Northern Hemisphere.

The news from below the equator is good, however, and promises that this observational unbalance will be alleviated, in part at least, in the near future. A 74-inch reflector is going through its final testing at the Commonwealth Observatory, Canberra, Australia, and joins the 74-inch Radcliffe reflector at Pretoria, South Africa, as the largest telescope in operation in the Southern Hemisphere. The Union Observatory also has plans for a 74-inch reflector and has already moved some of its observing equipment from Johannesburg, where the industrial smoke, haze, and city lights have become an increasingly serious problem, to a new site on the high veld near Hartebeestpoort Dam 20 miles west of Pretoria.

The Royal Cape Observatory, located 3 miles from the center of Cape Town, is acquiring a 40-inch reflector in 3½ years, which will cost $210,000 and will be located away from the city. This will be the first new major piece of equipment in more than 50 years for this observatory, which was founded by the British Admiralty in the 1820's. The Royal Cape Observatory has had a long and active history in the field of stellar astrometry and in more recent years has pioneered in the increasingly important field of precision stellar photometry.

The Boyden station at Harvard Kopje near Bloemfontein, Orange Free State, has recently come under the joint control of six observatories—namely, Harvard Observatory; Armagh Observatory, North Ireland; Dunsink Observatory, Eire; Hamburg Observatory, West Germany; Stockholm Observatory, Sweden; and Uccle Observatory, Belgium. The two main telescopes at Harvard Kopje are the 60-inch Rockefeller reflector and the 32-inch Baker-Schmidt telescope. The site is undoubtedly a good one, free of city smoke and lights, with winter observing conditions especially fine.

Despite all this evidence of southern hemispheric activity, none of the aforementioned telescopes matches the power of the three California reflectors, the 200-inch Hale telescope at Palomar, the 120-inch at Lick, and the 100-inch Mount Wilson reflector. Provisional plans have been announced, however, for a Joint European Southern Observatory, which will include a 120-inch reflector, a 48-inch Schmidt telescope like that on Palomar, and possibly a meridian circle. Such an observatory would have three main functions: (i) to help fill in the extensive gaps in our basic observational data; (ii) to provide first-class observing facilities for experienced astronomers who live in poor climates and who lack proper equipment; (iii) to take fuller advantage of the most unusual observing opportunities provided by the southern third of the sky. The observatory would cost $4.5 million, and the following six countries have taken part in the preliminary discussions: Belgium, France, Great Britain, Holland, Sweden and West Germany. An expedition of four European astronomers is now in South Africa investigating sites on the high veld and in the Karroo. Extensive and lengthy site-testing is necessary for such a large telescope, which becomes ineffective at times of poor seeing. The telescope should be located far from a population center in an atmosphere both stable and transparent a large part of the time. A similar site-testing program, sponsored by the National Science Foundation, is now studying possible sites in the southwestern United States in connection with the proposed new National Astronomical Observatory.

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Need for Patent Examiners

American industry is facing long delays in obtaining patent coverage for products and processes that are otherwise ready for the market, according to reports made at a recent meeting of the New York Patent Law Association, which was addressed by the Commissioner of Patents.

These delays stem from the great increase in the number of patent applications filed during the past few years. The flood of inventions has stretched

the average prosecution time per patent to 3½ years.

The association points out that the patent examiner thus holds a key position in the advancement of American technology and that the only way to reduce these delays and clear the way for marketing the new products and processes is to employ new patent examiners to pass on the backlog of applications that have piled up in almost every technical field.

Steps have already been taken in this direction, and approximately 100 new patent examiners have been added to the examining staff since last June. It is understood that the Patent Office wants 300 new patent examiners in 1956; 125 in the first quarter, 25 in the second quarter, and 75 in each of the last two quarters. There are immediate openings for engineers and scientists who can accept appointments in Washington now.

Patent examiners pass on applications for patents in a wide range of technical fields to determine whether they are novel and whether invention is involved. This calls for a study of the issued patents and the related scientific literature. The association points out that the technical graduates who apply will find the job both interesting and stimulating and one that keeps them in close touch with the latest technical developments. The job offers opportunities for rapid advancement within the Patent Office. Washington also offers unusual opportunities to carry on graduate studies at the same time.

Salaries for examiners start at $4345 a year, and it is possible to reach a salary of $7570 in 5½ years, with salaries in excess of $13,000 available. The Patent Office also offers vacations and sick leave and pension benefits.

Engineers and scientists who hold a college degree in engineering or applied science, or a degree with a major in chemistry or physics, or with certain combined credits in these fields, are eligible for appointment as patent examiners, without examination, upon application to the Commissioner of Patents in Washington, D.C.

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General Principles of Cooperation on Biological Abstracting

At their annual meeting on 18 Feb. 1956, the trustees of *Biological Abstracts* formulated and adopted the following general principles to guide their future course in matters of cooperation on biological abstracting.

Recent studies of the literature of biology and its coverage by abstracting services make it very evident that there is an urgent need for a wider and more efficient coverage of the world's biological literature. In an effort to provide biologists with a truly comprehensive abstract coverage of biology, the trustees of *Biological Abstracts* have adopted the following general principles of cooperation on biological abstracting as the basis on which they are prepared to cooperate with any and all abstracting and indexing services.

1) *Introduction*: (i) There is great need for more efficient abstract coverage of world biological literature. (ii) Certain areas of the literature of biology are well covered, but others are relatively untouched. (iii) Conservation of the time and efforts of biologists makes it imperative to devise ways to avoid duplication in abstracting services. (iv) An abstract is considered to be a greatly condensed version of an original research paper.

2) *Parties to any agreement*: (i) Biological Abstracts, Inc., would welcome the opportunity to negotiate specific bilateral agreements with any abstracting service under the broad terms of this instrument. (ii) These principles are so phrased that any abstracting service or association of scientists may cooperate. (iii) Indexing services are also invited to cooperate.

3) *Clear indication of areas of core coverage by a cooperating service*: (i) A hard *core of journals* which a cooperating service proposes to *abstract* as completely as possible should be made known in advance. (ii) Duplication of the abstracting of *core journals* should be avoided by each service, when possible. (iii) Service in a given country should give first consideration to adequate coverage of the major journals of its own country. Ease of access, speed of getting journal to abstractor, page proof, and language are factors that determine journal coverage. (iv) Services with limited subject interests could also participate by indicating the journals they would cover completely.

4) *Selective abstracting*: (i) To provide broad coverage, a cooperating service may, in addition to its core coverage, *publish* abstracts selected with reference to subject matter as well as geographic and linguistic representation. (ii) Selective abstracting may be done by staff and/or voluntary abstractors. (iii) Selective abstracting may also be accomplished by use of abstracts prepared by other services and reprinted under bilateral agreements.

5) *Permission to use abstracts of other services*: (i) By mutual agreement one service may use the abstracts prepared and published by another service, provided that credit for the source is given with each abstract. (ii) Percentage or number of abstracts so used would be specified in the agreement in order to insure that each service would be a substantial producer of new abstracts. (iii) Initially the percentage of abstracts used under reprint privileges should be a relatively small portion of the abstracts prepared by a cooperating service in order to protect the small specialized service from unfair competition. (iv) Selective reprinting would permit a cooperating service to include or exclude abstracts according to its own standards.

6) *Promotion of wider international cooperation*: (i) Greater international cooperation should be sought through appropriate international organizations. (ii) Wide publicity should be given to the availability of cooperation under the foregoing terms. (iii) The ICSU (International Council of Scientific Unions) Abstracting Board, which is promoting successful international cooperation in physics abstracting and is beginning to expand its services to chemistry, should be encouraged by UNESCO (United Nations Educational, Scientific, and Cultural Organization) to include biology in its scope. (iv) Cooperation in the abstracting of biology in medicine should be stimulated through CIOMS (Council for International Organizations of Medical Sciences) and WHO (World Health Organization). (v) Similarly, in agriculture the services of FAO (Food and Agriculture Organization) should be solicited. (vi) As opportunities develop, negotiations looking toward further integration of comparable services will be explored.

News Briefs

■ D. B. Carlisle and C. G. Butler have reported [*Nature*, **177**, 276 (1956)] that the "queen substance" of honey bees that normally inhibits ovarian development in worker bees would also inhibit ovarian development when injected into prawns from which the eyestalks had been removed. In prawns the sinus glands of the eyestalks contain a hormone that inhibits ovarian development during a part of the year. When eyestalks are removed from prawns with regressed ovaries, the ovaries grow rapidly. Thus, the alcohol extract of a queen bee has the same inhibitory effect as the eyestalk hormone.

In a reciprocal experiment, sinus glands were dispersed in a Potter homogenizer in 67-percent sucrose syrup. This was added to a pollen-candy mixture and fed to newly emerged bees; the control group was fed a pollen-candy mixture without any sinus gland additive. There was a highly significant inhibition of ovarian growth in the experimental group of bees after 19 days of such feeding.