long period, and that local or secular variations in this pattern must have been minor.

Morris Goodman (Wayne State) showed by means of two-dimensional starch-gel electrophoresis and immunodiffusion precipitin testing that the divergences in serum proteins between any two of the hominoid genera (*Homo, Gorilla, Pan, Pongo*, and *Hylobates*) are greater than those found among cercopithecine genera (*Macaca, Papio*, and *Cercopithecus*). Further, in disagreement with the taxonomic practice of having man be the sole living representative of the Hominidae and of grouping orangutan, chimpanzee, and gorilla together in the Ponginae, a serological classification would group *Pan, Gorilla*, and *Homo* in the Hominidae; *Pongo* and *Hylobates* would be separated from this phyletic assemblage and also from each other, but would still remain within the Hominoidea.

Janet A. Hartle (South Dakota), having set for herself the task of finding an unrecognized distinguishing feature of the Mongoloid cranial face susceptible of simple metrical demonstration, produced evidence that she had succeeded. The feature in question is the frontal process of the zygomatic bone and particularly the shape of this process as caused by the variable development of the marginal tubercle. She showed that this tubercle reaches its highest development in the classic Asiatic Mongoloids; is least developed in whites and Negroes; and is intermediate in size in American Indians. Hartle suggests that this racial difference may reflect a more forward attachment on the skull of the temporal muscles in Mongoloids and also in some way perhaps the claimed greater amount of fat over the Mongoloid face.

Even though attendance was down at this the farthest west meeting in its history, the Association will hold its next meeting in Mexico City by invitation of the Instituto Nacional de Antropología y Historia. Elected to office this year were Gabriel Lasker (Wayne State), president, and Alice M. Brues (Oklahoma), member of the Executive Committee. In an unusual move, the Association named Juan Comas (Mexico) as honorary president for the year. Frederick S. Hulse was selected as the new editor of the *American Journal of Physical Anthropology*.

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Astronomy

The rapid growth of the nation's newest observatory for optical astronomy gave added stimulus to the annual spring meeting of the American Astronomical Society which was held in Tucson, Arizona (17–20 April). The Kitt Peak National Observatory, whose location was selected only 4½ years ago and whose management is handled by AURA, Inc., now has in operation the world's largest solar telescope, a 36-inch Cassegrain reflector used for stellar research and, since April, an 84-inch reflector, which is the fifth largest in the world. The growing complex of telescopes atop Kitt Peak now includes the 36-inch Steward reflector of the University of Arizona relocated upon an area subleased from the National Science Foundation.

This meeting was highlighted by five papers on the most interesting new discovery in astronomy in the past several decades—the identification of "radio stars" as a new class of objects. These objects, first identified by the Mount Wilson-CalTech group of radio and optical astronomers, appear to be the consequence of the formation of stellar bodies at the nuclei of galaxies; such bodies have masses of 10^6 or more solar masses. Obviously much theoretical and observational work will be required to explore the nature of these new objects, whose prodigious energy output solves the riddle of the apparently large energy flux observed from those peculiar galaxies that are known to be strong radio emitters.

In accordance with the interest in the new instrumental developments in the Tucson region at the Kitt Peak National Observatory, the Steward Observatory, and the Lunar and Planetary Laboratory, a symposium on instrumental astronomy was held under the chairmanship of A. B. Meinel, president-elect of the Rocky Mountain and Southwestern Division of the AAAS. This symposium did not attempt to cover areas within the very broad field of instrumental astronomy that is developing within the United States, but instead leaned toward the presentation of certain techniques that have recently seen much development in other countries, in particular, in the utilization of interference phenomena in new observational research. While there are exciting new developments in the laboratory stage of exploration, the symposium adhered closely to the boundary condition of considering only those instruments that had been successfully applied to research.

W. S. Finsen (Republic Observatory, Johannesburg, Union of South Africa) described the eyepiece interferometer, a relatively simple device in theory but one requiring great skill in construction and use. It has enabled Finsen to make notable advances in the study of close binary star systems.

Methods developed for the study of emission nebulosities, particularly through the extension of Fabry-Perot interferometers, were described by G. Courtès (Observatoire de Marseille, France). His study of high-velocity emission filaments near the nucleus of our galaxy has emphasized the ability of this technique to detect features not observable by more conventional methods. He presented many fine illustrations of the emission structure of galaxies taken by him at Haute-Provence Observatory.

Luc Delbouille (Institut d'Astrophysique, Liège, Belgium) discussed the technique of scanning interference spectroscopy with the Michelson interferometer. This method, first pointed out by Felgett, utilizes all of the light from an object while obtaining the spectrum of the object. This method has been in the foreground of consideration for space missions since accurate guiding on the source is not necessary; however, Delbouille presented in a realistic manner the special problem that must be overcome if successful observations are to be made with this instrument. The work by him and his colleague, Miss Roland, has demonstrated that fine spectra can be obtained, and much hope is held for the future of this rather elegant technique.

As a comparison to the beginning efforts with scanning interferometers, G. P. Kuiper (University of Arizona's Lunar and Planetary Laboratory) presented the magnificent results which he recently obtained with conventional grating and prism spectrometers in the infrared. He presented a series of spectra, taken with cooled PbS and InSb detectors, of the planets and cool stars in the 1- to 5-micron region with resolutions of several thousand in the best traces. Of particular interest, Kuiper showed the first traces of omicron Ceti, an M8 star, showing the presence of water vapor in the stellar atmosphere. While numerous features discovered in these spectra have been

identified with known molecular species, he pointed out that a number of prominent features remain unidentified.

While Philip Baumeister (Institute of Optics, University of Rochester) is not an astronomer, he has had a very definite effect upon astronomical instrumentation because of his pioneering work in modern techniques of the design of high-efficiency, multiple-layer interference stacks. These devices are rather well known as narrow-band dielectric filters, but Baumeister showed how other applications of this same technique could yield both nonreflecting surfaces and ultrahigh reflecting surfaces with exceptional properties over pass-bands of several thousand angstroms. Since astronomical observations are made with so few quanta available per second, astronomers are always seeking the most efficient systems. Baumeister's paper showed some welcome new techniques that as yet have only been applied to relatively few existing astronomical instruments.

A highlight of the meeting was the report on the recent flight of the 36-inch Princeton University Stratoscope II telescope. R. E. Danielson described the balloon-borne telescope and the actual flight in behalf of his Princeton colleagues, J. E. Gaustad and Martin Schwarzschild. His description of the "cliffhanger" aspects of the entire mission held the audience on the edges of their chairs. H. F. Weaver (University of California, Berkeley) then described the scientific instrumentation for the flight and the scientific results on behalf of himself and his colleague, N. Woolf. It was indeed remarkable that, in spite of the difficulties of this maiden flight, the germanium helium-cooled bolometer and spectrograph functioned so well after the balloon telescope had already well exceeded its maximum operating range. While the scientific results only yielded a maximum value for the water vapor content of the Martian atmosphere, the limit has made a valuable scientific contribution and provides the scientific boundary conditions for later flights.

Following the conclusion of the symposium, G. Munch (Mount Wilson and Palomar Observatories) and H. Spinrad (Jet Propulsion Laboratory) requested time to announce their detection of water vapor in the Martian atmosphere. Their data had been obtained a few days earlier with a new grating installed in the Mount Wilson 100-inch Coude spectrograph. Their spectra clearly showed the presence of

resolved satellite lines, Doppler-shifted away from the much stronger terrestrial water vapor lines. Their preliminary results both confirmed the correctness of the results from Stratoscope II and also demonstrated that perhaps all possible avenues open for the study of this problem had not been fully exhausted.

Co-hosts of this 113th meeting of the American Astronomical Society were the University of Arizona and the Kitt Peak National Observatory. The next meeting will be held at the University of Alaska, College, 22–24 July, immediately following the total solar eclipse which will be visible there on 20 July.

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Plasmas: Wave Interaction and Dynamic Nonlinear Phenomena

The study of wave interaction and nonlinear phenomena in plasmas and ionized media has become in recent years a subject of great importance not only to physicists and engineers, but also to wave propagation theoreticians. Pennsylvania State University, whose Ionosphere Research Laboratory has a traditional interest in ionospheric wave interaction phenomena, arranged a conference on wave interaction and dynamic nonlinear phenomena in plasmas. Outstanding investigators from universities and industrial laboratories attended the meeting (4–6 February). In order to make the sessions more effective a limited number of speakers (about 15) were invited, and no attempt was made to arrange or group papers into areas; instead, papers were randomly arranged since mixing of the workers in vastly differing areas of specialities was one of the objectives of the meeting.

Basic wave interaction and dynamic nonlinear phenomena have much in common and scientists and engineers working in these diverse fields, which range from the high-power klystron studies to the plasma physics of the sun, greatly benefited from being brought together to exchange views and theoretical ideas. The high-power tube engineer, who deals with the "cleanest" of all plasmas, has advanced the analysis of nonlinear phenomena and had valuable information for those scientists who have to work with less