

ASTRONOMY

Astronomical Highlights

Interesting contributions during the past year include ones concerning positions of stars as well as in the new field of radio astronomy.

► TEN TOP astronomical highlights of the past year, picked by Dr. Harlow Shapley of Harvard University.

1. Out of the abundance of amazing contributions in the field of radio astronomy—contributions from Holland, England, Australia, the United States and Canada—especially noteworthy was the work of John D. Kraus and H. C. Ko of the College of Engineering of Ohio State University. They mapped much of the northern sky as it would be seen to an eye sensitive only to radiation of wavelength about four feet. The Milky Way is clearly recorded in this radiation, as well as the Virgo group of galaxies, the intensely bright galactic nucleus, and some special hot spots in Centaurus, Cygnus, and especially Cassiopeia. To this radio eye globular star clusters remain undiscovered.

2. The dedication of the new Pulkovo Observatory, near Leningrad in Russia, built on the site of war ruins, brought again into the national and international picture a large institution that one hundred years ago was sometimes rated as the astronomical capital of the world.

3. Two large enterprises in the astronomy of position were completed. At the Lick Observatory, Director C. D. Shane, assisted by C. A. Wirtanen, completed the first series of plates for the sky mapping program, planned many years ago by the former director, W. H. Wright; and at the University of Minnesota Dr. W. J. Luyten finished the Bruce Proper Motion Survey, adding 19,000 stars to his lists of those with appreciable motion—an investigation that has continued steadily for 25 years. Some decades from now the Lick Observatory series of plates will be repeated and will then provide the best material ever assembled for the study of star motions referred to distant galaxies.

Evaluation of the rotation of our galaxy is one of the goals of this long-range investigation.

4. At the Mexican National Astrophysical Observatory, Tonanzintla, Puebla, Dr. Guillermo Haro, director of the Tonanzintla and Tacubaya Observatories, discovered and measured a large number of "slow motion" flare-like stars in the nebulosities of Orion.

5. Dr. Milton Humason of Mt. Wilson-Palomar completed at least one phase of his elaborate study of the radial velocities of 580 galaxies, which, when supplemented by Dr. N. U. Mayall's measures at the Lick Observatory of the red shifts of nearly 300 galaxies, will provide the basic information on the expanding universe. Dr. Humason

finds 20 galaxies with velocities in excess of 25,000 kilometers per second, with the greatest speeds just over 60,000 kilometers per second.

6. New and highly promising developments were reported in the utilization of solar energy, including (a) the large scale production of solar cookers in India, (b) a practical solar cooker developed in California, which can attain a temperature under best conditions of 8,500 degrees Fahrenheit (not much less than the temperature of the solar surface), and (c) some partially revealed developments in the Bell Telephone Laboratories and the Wright Air Development Center, which involve cells and batteries that absorb the solar radiation and make it efficiently available for heating.

7. The production of a color-magnitude array for the globular cluster Messier 3, reaching down for the first time to stars of less candle power than that of the sun, was accomplished by H. C. Arp and A. R. Sandage with the Hale telescope on Mt. Palomar.

8. A new and appealing proposal was advanced by Dr. Dean B. McLaughlin of Michigan University to account for the markings on Mars. They can be reasonably explained as analogous to the dust bowls of the Southwest. The "trade winds" on Mars (where the absence of oceans and of long mountain ranges permits them to behave otherwise than with us) pile up, in drifts and ridges, the sand, dust and volcanic ash, some of which, because of the lack of oxygen in the Martian atmosphere, can have a greenish tone. Thus both the canals and the life on Mars are disposed of as largely illusions produced by Martian meteorology. To provide the drift material, active volcanoes are required. Only an astronomer competent in geology and meteorology could have originated the theory.

Although only preliminary results have been reported, the wide attack on the total solar eclipse of June was noteworthy, and especially the ten-station program of the U. S. Air Force, which distributed observers all the way from Ontario through Labrador, Greenland, Scandinavia, to Iran.

10. An extensive and very valuable program of support for astronomical research was followed by the National Science Foundation, and considerable assistance was given to pure astronomical investigations by the U. S. Air Force, the U. S. Navy and the National Bureau of Standards.

In summary, the past year has been noteworthy for interesting contributions all the way from the heart of the old astronomy (positions of stars) to the astronomical borders where the scientists of other fields,

such as radio and engineering, contribute importantly to our knowledge of stars, galaxies, interstellar dust, and the solar system.

Science News Letter, November 6, 1954

NUTRITION

More Food Needed for Increased Population

► VAST INCREASES in food needs are foreseen by the Food and Agriculture Organization of the United Nations as a result of expected population increases.

The FAO report admits the hopelessness of reaching "fully satisfactory nutritional standards" because the "attainment of such standards is clearly impossible in the near future over large areas of the world."

A somewhat lower and more nearly realizable dietary level has been set as a target, but even to reach this would require large increases in food supplies.

In the world as a whole, during the next 25 years, supplies of cereals—the most important of staple foods—need to be increased by 43%, according to FAO estimates, merely to feed the extra mouths at recent nutrition levels, whereas to achieve modest improvement would require an additional 10%. To reach the improved levels, fish supplies would have to be augmented 88% and milk, some 70%.

Disparities in local production are still more marked, with the required increase of cereals in the Near East to reach the improved level being some 78% and for milk, 81%.

The report does not forecast whether or not the target levels will be reached but states that "though there may be no technological reasons why food production cannot be raised by the indicated order of magnitude," this would "call for a much greater effort than is envisaged at present."

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PALEONTOLOGY

Mexican Fossil Find Adds New Time Evidence

► THE MEXICAN mammalian family tree has added more than 10,000,000 years to its ancestry with the report of the uncovering of the first remains from the Miocene period to be found in Mexico or Central America.

Fossilized remains of the palate and limb bones of a Miocene horse, *Merychippus* and the distal of a small cannonbone from what is thought to be a lower Miocene camel, *Oxydactylus*, were unearthed.

The discovery was made in the Valley of Nejapa along the Pan American Highway, about 750 miles south of Mexico City.

It represented the first evidence that mammals of this period in geological history 29,000,000 years ago had inhabited the land area between Panama and the United States-Mexico border.

The discovery, made in 1952, is reported in *American Journal of Science* (Oct.).

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