SCIENTIFIC EVENTS

THE ROYAL OBSERVATORY, GREENWICH[1]

THE annual report of the Astronomer Royal, just published, refers to the work of the Royal Observatory during the period May 1, 1940–April 30, 1941. To those who know the position of the observatory, in the midst of military and industrial objectives, it will come as no surprise that much of the work has been curtailed by enemy action. The last report mentioned the dismantling of much of the optical apparatus; most of the mirrors and lenses have now been sent away from Greenwich for safety. Since heavy bombing of London started last September, night observations have been impossible on such of the telescopes as had not already been dismounted at the outbreak of hostilities; in fact, the only observing programs still carried on at Greenwich are daylight ones, namely, the routine meteorological work and the photographic and visual solar observations.

The public time service functions well from two emergency outstations, as the familiar "six pips" regularly testify. The Rugby rhythmic signals, however, in present circumstances fall short of the high precision needed for control of frequency standards, though they are, of course, quite adequate for navigation. Rating of chronometers and watches and their issue to the Royal Navy continue as usual, though the entire establishment concerned has been moved for the second time in two years.

Work has ceased on the Airy transit circle after continuous observation with this instrument for ninety years. More than 650,000 observations have been made with it, forming the most important contribution from a single instrument to fundamental positional astronomy. The new reversible transit circle which is to take its place has obtained nearly 10,000 transits during the last three years. When observing ceased in September, 1940, the work of determining the division errors had been completed and an investigation started on the irregularities of the pivots. These latter have already been found to be extremely small.

The photoheliograph and spectrohelioscope observations show the expected decline in solar activity from the 1937–38 maximum, the sunspot frequency having dropped to about half that at maximum. Nevertheless, twenty-one large groups of spots occurred, six of them being later associated with magnetic storms. One of these latter, that of March 1, 1941, ranks high among the most severe disturbances of the past ninety years. The associated spot could not be extensively observed because of cloud, but the number of short-wave radio fade-outs occurring during its central meridian passage suggests that it was chromospherically very active. Over the year as a whole, however, both chromospheric eruptions and radio fade-outs were few.

The meteorological department of the observatory has celebrated its centenary of routine observations. Features of the year's weather include an August drier than any for 122 years, and a period from December to April during which each month was considerably colder than normal, the temperature in the Stevenson screen never reaching 59° F. for the whole five months.

Discussion of the photographic material, comprising nearly 3,000 plates, obtained during the 1931 opposition of Eros, is now practically complete. The solar parallax deduced from these observations at stations all over the world is $8 \cdot 790'' \pm 0 \cdot 001''$, the previously accepted value being $8 \cdot 80''$.

The "Nautical Almanac" office continues its essential work, though it has had to contend with the destruction by fire of the whole of the type and plates for all its publications except the "Astronomical Navigation Tables." The consequent delay in publication is being rapidly made good, in some cases by using photographic reproduction in lieu of printing from type.

Astronomers all over the world will join in sympathizing with the Astronomer Royal and his staff on the interruption of many of their long-established programs, and in congratulating them on their maintenance of essential services throughout a very trying period.

[1] From *Nature*.

COSMIC RAY INVESTIGATIONS

RESULTS of cosmic ray investigations in the Andes ranging up to 19,200 feet—nearly a mile higher than the highest peak in the United States—were reported on his return to the United States on August 22 by Dr. Arthur H. Compton, of the University of Chicago, leader of the expedition. These are, according to the official announcement:

1. At an altitude of more than 15,600 feet on the site of a Cerro de Pasco Corporation mine near Oroya in central Peru, Drs. Ernest O. Wollan and Donald Hughes photographed tracks of cosmic ray particles with a cloud chamber. They had 9,000 pounds of equipment, including the large permanent magnet used in high altitude experimental airplane flights in this country. Their chief finding was clear photographic evidence of the production of groups of positive and negative mesotrons.

2. Working on Mount El Misti in southern Peru at altitudes up to 19,200 feet, Dr. Norman Hilberry and his wife, Dr. Ann Hepburn Hilberry, verified fundamental