SCIENCE NEWS

Science Service, Washington, D. C.

NOTES ON THE ECLIPSE

INVESTIGATORS of the U. S. Bureau of Standards will make extensive studies of the radio effect of the eclipse of the sun on August 31. From a field location either in northeastern Maine or eastern Nova Scotia and simultaneously from the permanent laboratories at Washington, physicists and radio engineers under the direction of Dr. J. H. Dellinger will record the effects of the eclipse on the field intensities of received radio waves and on the height of the ionized or Kennelly-Heaviside layer. The Washington location is expected to be very satisfactory for studies of changes in the ionized layer due to the optical eclipse as it is nine tenths total at the earth's surface and somewhat nearer totality in the ionized layer above Washington. The purpose of the observation in Maine or Nova Scotia is to test for the existence of effects in the ionized layer due to neutral corpuscles shot off from the sun. Three members of the Bureau of Standards staff will take to Maine or Nova Scotia two small pulse-signal transmitters and an automatic recorder and a cathode-ray oscillograph for measuring ionized layer heights. They will also observe the critical frequencies and heights of both the E and F regions of the ionized layer. In order to help interpret the records obtained during the eclipse, observations will be made for several days preceding and following the eclipse. Records of field intensities of received waves from broadcasting stations, and possibly from a high-frequency station, will be made both at Washington and on the eclipse expedition.

DR. IRVING LANGMUIR, of the General Electric Company, will observe the eclipse from an airplane starting from Concord, N. H., in time to reach the center of totality at the time the moon hides the sun. As Dr. Langmuir's airplane will be equipped with instruments for fog flying, he will be able to rise above any clouds that may obscure the spectacle from the ground. Two motion picture cameras, one with telephoto lens, will be carried and Dr. Langmuir will photograph the advance of the moon's shadow and take photographs of the corona.

DR. CLYDE FISHER, curator of astronomy of the American Museum of Natural History, will photograph the eclipse from an airplane flying in the path of totality in Maine.

THE eclipse expedition of the Maria Mitchell Observatory on the Island of Nantucket will be located on August 31 on a 250-foot tower at North Truro, Cape Cod, as guests of H. M. Aldrich. Dr. Margaret Harwood, director, will lead the party consisting of Miss Marjorie Williams, Mrs. Francis W. Davis, Miss Merle E. Turner, Albert E. Brock, Edgar F. Sanborn, Jr., Gerald M. Reed, Jr., and Nathan C. Davis. The expedition will make photographs of the corona designed to study photometrically its light, using a 4-inch photographic telescope. Visual observations will be made with another telescope.

CHOOSING to observe the eclipse from near the edge of the path of totality, Professor Herbert Dingle, of the Imperial College of Science and Technology, London, assisted by members of the McGill University staff, will make photographs of the sun's spectrum that are expected to be superior to previous efforts. On the roof of a McGill University building, a large spectroscope with lens of 16-foot focus will be mounted. The bright line spectrum at the cusp of the partially eclipsed sun during the half hour before and after totality will be photographed with large dispersion. Professor A. Fowler, a colleague of Professor Dingle, made visual observations at a partial eclipse in London twenty years ago which cause Professor Dingle to hope that the coming observations will yield more accurate values of the wave-lengths of the bright line spectrum than those now available. A photograph of the Fraunhofer spectrum of the sun's limb just before and after totality is expected to give a photograph free from the diffused atmospheric light from the center of the sun's disc.

To give astronomers observing the eclipse accurate time signals, the U. S. Naval Observatory will broadcast special radio signals from 1:55 to 2:00 P. M. and from 3:55 to 4:00 P. M. Eastern Standard Time on Wednesday, August 31, the day of the eclipse. The signals will be transmitted by NAA, Arlington, Virginia, on regular time frequencies of 113, 690, 4205, 8410, 12615, 16820 kilocycles, from Annapolis on 17.8 kilocycles, and they will be rebroadcast by WGY, Schenectady, on 790 kilocycles, and WCSH, Portland, Maine, on 940 kilocycles.

SPECIAL radio signals will be transmitted by CNRO, the Canadian National Railways station at Ottawa, to aid in the research upon the radio effect of the eclipse according to an announcement made by Dr. A. S. Eve, director of the department of physics of McGill University. The transmissions will be on 600 kilocycles (500 meters) from 2 to 7 P. M., Eastern Daylight Saving Time, on August 31, and for four days before and two days after the eclipse, the signals will be transmitted from 3 to 6 P. M., Eastern Daylight Saving Time. Dr. Eve suggests that radio observers in eastern United States might measure the strength of the radio signals with a suitable galvanometer attached to their receiving sets. The tests are expected to aid in understanding the way the sun affects the ionized layers of the earth's atmosphere that act as reflectors for radio waves.

THE INCREASE OF TYPHOID FEVER

TYPHOID FEVER is increasing all over the nation. More typhoid fever cases have been reported to the U. S. Public Health Service in the last three weeks than were reported at corresponding times in the last four years. Health officials think it may be due to certain laxity in sanitary procedures as a result of decreased state and municipal appropriations for such purposes.

For the week ended August 6, there were 1,119 cases reported, while during the corresponding period last year there were only 996. On July 30 of this year there were 1,091 cases, and 908 in 1931. On July 23 there were 1,294 cases, as against 751 the preceding year. This rise has occurred considerably earlier than the usual seasonal increase in the disease. Health officials do not expect the peak to be reached for another three weeks.

Typhoid fever is now one of the preventable diseases. It was originally brought under control by sanitary measures, such as proper sewage disposal, purification of water supplies, pasteurization of milk and supervision, as far as possible, of typhoid carriers. One attack of typhoid fever makes a person immune to subsequent infection and this immunity may now be given by a course of inoculations with killed typhoid germs. The U. S. Public Health Service, however, warns that this individual immunization can not take the place of organized sanitary effort to control and prevent typhoid fever.

Typhoid fever is caused by a germ, or bacillus, which enters the body through the mouth and is discharged in the body excretions. Drinking water and oysters may harbor the germs as a result of sewage contamination. The germs may get into milk and other food by means of flies or human carriers, the latter usually being healthy persons who have recovered from the disease, but still are discharging the germs.

The onset of the disease is rather gradual, with feverishness, or perhaps a chill and headache. It is often not recognized for several days. The disease causes ulcerations of the intestines. When these perforate or cause hemorrhage, death is likely to follow.

THE PROFITS OF RESEARCH

SCIENCE should receive part of the profits that result from research and new discoveries, to serve as "seed" for further research and discoveries, in the opinion of Professor Winterton C. Curtis, of the University of Missouri. He states that the traditions of his profession forbid a scientific man from taking any personal profit from patentable ideas or discoveries that originate with him; and he often has the unpleasant experience of seeing work exploited commercially to the great financial benefit of some person or firm that did nothing toward its beginning or development, while not only the investigator but also the university or research laboratory that has given him working facilities and paid his salary struggle in financial straits.

To remedy this, and to enable scientific institutions to obtain the equipment and materials needed for more efficient research, Professor Curtis recommends the organization by universities and non-commercial research establishments of holding companies, to take charge of patents issued to scientific workers. Commercial firms desiring to make use of such patents would then deal with these companies, paying cash and royalties to them, and making suitable guarantees for the protection of the scientific reputation of the worker and of his institution and for the public welfare. The institution would be represented on the board of directors of the holding company by faculty or administrative officers.

An arrangement of the kind recommended by Professor Curtis has already been set up by the University of Cincinnati, to gain for its scientific research and eventually for its general funds the financial benefits accruing from patents issued on the work of its Basic Science Laboratory. Other institutions which have made arrangements to gain for research some of the benefits of scientific discoveries by their members include the University of Wisconsin, the University of Illinois and St. Louis University Medical School.

ITEMS

A SEVERE earthquake jarred the bottom of Bering Sea north of the Aleutian Islands, on August 11, reports received by Science Service from a number of seismological observatories indicate. As calculated by the U. S. Coast and Geodetic Survey, the epicenter, or point of greatest disturbance, was in 54 degrees north latitude, 171 degrees west longitude. The time of origin was 10:24 P. M., Eastern Standard Time.

THE Peltier-Whipple comet, visible through binoculars in the northwestern evening sky, has a tail twice as long as the diameter of the full moon appears in the sky. This one degree tail is reported by Dr. George Van Biesbroeck, of the Yerkes Observatory. The head of the comet appears like a star.

ULTRA-VIOLET rays of shorter wave-length, usually regarded as harmful to living things, can not penetrate the outer coats of seeds. But those of longer wave-length, which have a stimulating effect, pass through. This has been determined in preliminary experiments by Drs. Charles A. Shull and Harvey B. Lemon in the laboratory of plant physiology of the University of Chicago. They made use of seed coats from corn, peach kernels and cocklebur seeds, stretching them out in front of the slit of a spectrograph and focusing ultra-violet rays, filtered to known wave-lengths, upon them. The fractions of the radiation that passed through were recorded on photographic plates. The results apparently indicate that seed coats protect their living contents against harmful ultra-violet radiations but let in those of stimulating effect.

ENTOMOLOGISTS of the U. S. Department of Agriculture are preparing to cooperate with the Pennsylvania Department of Agriculture and the State Department of Forests and Waters in a campaign to wipe out a newly-discovered infestation of gypsy moth in the mountains near Pittston, Pennsylvania. This insect, introduced originally from Europe, has for years been a pest in New England, and at one time threatened to wipe out some of the finest forest and park trees in that region. The present outbreak in Pennsylvania is well outside its former known range, but is causing no alarm, for there are no tree nurseries in the area affected, so that there is no danger of its being unwittingly shipped out. The infested area so far surveyed is about four by eight miles in extent, and consists principally of cutover land.