to give an approximation to the numbers of fish actually present. It is hoped to check such approximations by counting all fish over a weir, where such can be built.

If it proves possible to segregate the run of sockeye salmon of a given race in the commercial catch and if the proportion escaping to spawn may by this or similar methods be determined, the total numbers of salmon in the particular run of that race could be known. Naturally, this ideal will be difficult of attainment, first because of the confusion of races in the commercial areas, and second, because the proposed, as well as other, methods of estimating the escapement are still unproved. The goal, a separation of the several distinct strains or races of salmon and a knowledge of the fluctuation in numbers of each, is the same as that which in modern fisheries science is recognized as indispensable to regulation, a statistical history of the relation of yield to reproduction.

The tag and its application have been developed by a staff consisting of W. F. Thompson, R. E. Foerster, W. E. Ricker, J. L. Kask, C. E. Atkinson and L. E. Whitesel.

## A NEW OBSERVATORY TO STUDY THE SUN'S RADIATION

ON a mountain top in New Mexico in one of the driest, clearest spots in the United States, the Smithsonian Institution is now setting up a new observatory to observe the daily variations in the radiation of the sun.

At this observatory will be installed the apparatus used by Smithsonian observers at the observatory on the summit of Mt. St. Katharine on the Sinai Peninsula, which was closed last year. In many respects an ideal site for eastern hemisphere observations of solar radiation, the isolation of the spot and the extremely forbidding environment led the institution to close it after a very successful record of four years.

Alfred F. Moore, who had been in charge of the Mt. St. Katherine station, returned to the United States this spring and almost immediately, under the direction of Secretary Charles G. Abbot, started his search for a suitable American station. The ideal spot is one in which there is a minimum of cloudiness and rainfall, together with a very clear atmosphere usually to be attained only at great heights.

Mr. Moore found an excellent combination of these conditions on the 8,000-feet-high peak of Burro Mountain near the village of Tyrone in extreme southwestern New Mexico. Meteorological records show that this site has approximately 10 inches of rainfall a year. This in itself is small, but there is the additional advantage that it is nearly all concentrated in the months of July, August and September. A cloudy day is an extreme rarity at any other season. In contrast to most of the stations occupied by the Smithsonian Astrophysical Observatory, this is a very pleasant spot, according to Secretary Abbot, who has just returned to Washington after inspecting the progress of the work. There are small trees, shrubbery and flowers on the mountain top. There is an excellent source of water only two miles away, and it is planned to build a large reservoir tank on the summit itself.

The observing instruments, including some of the most delicate and sensitive known to astronomy, will be located in a horizontal tunnel extending back for approximately 30 feet into the mountain. The sunlight will be reflected into this tunnel and upon the measuring instruments by a mirror. The excavation of this tunnel is now completed. Living quarters are being built for the observers and their families.

The work of the observatory, in common with that of the other Smithsonian astrophysical stations, will be to determine daily variations from the solar constant—the average amount to which a black body one cubic centimeter in dimensions would be heated by the rays of the sun falling upon it in a minute, providing it were located at the mean solar distance and at the outer limits of the earth's atmosphere. In actual practice, of course, no such direct measurement can be made, but the same result can be obtained with the use of extraordinarily delicate measuring devices when proper allowance is made for the effect of various thicknesses of atmosphere on sunlight passing through it.

The Smithsonian Institution has gathered a large number of such daily records. They show clearly that the heat and light output of the sun is constantly fluctuating and that these fluctuations follow periodic curves. There is reason to believe that these fluctuations, in turn, are a major element in the fluctuations of temperature and precipitation on earth. The subject, however, is complicated and constant observations, together with a constant effort to make them more and more accurate, are essential.

## SCIENTIFIC LECTURES OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

THE program for evening scientific lectures of the College of Physicians of Philadelphia for 1938–1939 is as follows:

October 12.—James M. Anders Lecture XIII. Homer F. Swift and Alfred E. Cohn, members of the Rockefeller Institute for Medical Research. "Cardiac Diseases: Infectious and Non-Infectious, Course and Consequences."

November 2.—Edward A. Strecker, professor of psychiatry, University of Pennsylvania. "Should Psychoanalysis Be Purged?"

December 7.—Thomas Dent Mütter Lecture LI. William Boyd, professor of pathology and bacteriology, University of Toronto; pathologist, Toronto General Hos-