

SCIENCE IN ESPERANTO TAUGHT AT EDINBURGH

In connection with the 18th Universal Esperanto Congress to be held at Edinburgh from July 31 to August 7 on international summer school with all courses given in Esperanto will be held.

Science, medicine, folk lore, linguistics, and international law are the branches of learning in which courses will be offered. Among the professors of various nations who will lecture in the international tongue are Prof. Collinson of the University of Liverpool, Prof. Bujwid of the University of Cracow, Dr. Pascal Deuel of Leipzig, Dr. E. F. Fournier d'Albe and the Italian R. Orengo, Dr. Stromboli of Pisa, and Mr. Tarelli of the International Labor office in Geneva.

THE SUN A VARIABLE STAR; NEW EVIDENCE BY NEW METHOD

The sun is a variable star. This central fire of the planetary system does not glow with a steady heat but flickers from day to day and from year to year, and the vagaries of our earthly weather must depend at least partly on the sun's variations. This opinion, which has been supported for many years by Dr. C. G. Abbot of the Smithsonian Institution, finds new support in evidence produced by a new system he has devised for measuring and recording the changes in the energy reaching the earth from the sun,

Dr. Abbot calls attention to the work of H. H. Clayton, who has announced that he finds variations of weather caused by solar changes. But many meteorologists have not been convinced that the sun really varies. They fear that the complicated measurements of Dr. Abbot, hindered as they are by the haziness and humidity of the earth's atmosphere, are not conclusive. The variability which he reports, they suggest, may all be due to unavoidable atmospheric sources of error.

Dr. Abbot now announces a very direct test that should settle the question. Although it is impossible to do the measuring from a point outside the atmosphere, yet it is possible to select times when the transparency and other affecting qualities of the air are closely alike, and the sun stands at equal height above the horizon. At such times the solar heating should vary only if the sun does.

Selecting the month of July in the years 1910 to 1920 for his test, he collected results observed on Mount Wilson for all days of practically constant atmospheric conditions. The average monthly values thus selected he compared with those obtained by the usual process and heretofore published. He also compared them with the average monthly numbers of sun spots. The three curves that express his results run along very closely together. They show that the sun's heating in July 1917, averaged over 2 per cent. above that of Julys, 1910 and 1911. Correspondingly, the sun spot numbers were 117 in July, 1917, and only 14 and 3, respectively, in Julys, 1910 and 1911.

Not content with this proof of the reality of long-range solar changes, Dr. Abbot rearranged the measures in a way to test short-interval solar variation. For this purpose he picked out from the new data all the days that gave high values of solar heating, and all those which gave low ones. The average excess value for

51 high days was plus 1.43 per cent., and the average defect for 51 low days was minus 1.47. The same days, as already published four years ago, indicated on the average plus 0.51 and minus 0.42 per cent., respectively. Thus the days shown above normal by the new method of selecting times of equal atmospheric clearness had already been shown as above normal by the usual process, and vice versa. Of course the range as formerly published could not be so great, because the errors of observation could not be expected to fall the same in the two sets of data. Some days would be high and some low, not because of the sun's condition, but because the small observational errors helped to make them so.

Dr. Abbot's new method, he hopes, may be convincing of the sun's real variability. This will make all the more important and interesting his establishment under the joint auspices of the National Geographic Society and the Smithsonian Institution of a new solar observatory on Brukkaros Mountain in Southwest Africa. This site he selected last March after studying on the ground conditions in Algeria and Baluchistan. The mountain is 5200 feet high in a desert where the yearly rainfall averages only three and one half inches. Roads and construction are rapidly going ahead under the supervision of Mr. A. Dryden, inspector of public works for the government of Southwest Africa. The complex apparatus required has been prepared, and the expedition is expected to go forward about August 1 in care of W. H. Hoover, director, and F. A. Greeley, assistant.

SCIENTISTS URGE HARVEST TIME WAR ON GRAIN INSECT PESTS

Immediate fumigation to rid the 1926 wheat, corn and other cereal crops of insect pests immediately upon harvesting is urged by Drs. E. A. Back and R. T. Cotton, entomologists of the U. S. Department of Agriculture, as a means of saving American farmers millions of dollars this year. Ignorance of control methods, it is claimed, costs farmers a large share of their profits each year by causing them to sell their newly harvested grain as soon as possible to avoid loss from insect attack. By treating it themselves at small cost they could hold their grain longer and realize later on good market returns.

"What the farmer or corporation with financial backing has found profitable the farmer with limited means will also find profitable," Dr. Back said. The Department of Agriculture has made a study of the various chemicals used as fumigants and recommends several as simple enough for use on farms, and harmless and effective if rules are followed. Among these are carbon bisulphide, carbon tetrachloride and a mixture of the latter with ethyl acetate.

Studies by Dr. Back and others have shown that nearly all cereal crops, except those of the far North, are more or less infested when the grain ripens in the fields at harvest time, and delay in getting the crop under cover where it can be treated gives the insects a chance to multiply and spread to the other kernels. Even a single day's delay is costly. Fumigation can destroy every insect in the bins, but this is done more easily immediately upon harvesting.

Although the idea that insects generate of themselves from the "germ of the grain" has long been exploded, many farmers and grain dealers still believe in this