SCIENCE NEWS

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CENTENNIAL OF THE ROTHAMSTED EXPERIMENTAL STATION

ONE hundred years old this year, the famous Rothamsted Experimental Station at Harpenden, England, is now celebrating its centennial in spite of the war. It is reputed to be the oldest agricultural research institution in the world. The founder of the research station, Sir John Bennet Lawes, remained its active director until his death in 1900. Sir Joseph Henry Gilbert, a chemist, was associated with him during these 57 years. He died in 1901.

When the station was established chemistry was thought to be the only science that seemed to bear on agriculture. For that reason first emphasis was placed on chemical problems having to do largely with the feeding of plant life, and out of it came the creation of what were then called artificial fertilizers.

To carry out the work of making satisfactory artificial fertilizers, and to test the compounds and mixtures made, experimental plots were established and the new fertilizers tried on various crops. The famous wheat plots on Broadbalk carried this year their hundredth consecutive crop of wheat. Other plots have carried other consecutive crops for many years.

The chemistry of farm animal feeding also received early attention at Rothamsted. Animals were fed special diets over specified periods, were then slaughtered, and their body contents analyzed chemically. This early work established the basis for all the later qualitative studies of animal nutrition.

Rothamsted's work to-day includes all branches of scientific agriculture. Its main objective is still the objective set by its founder. As stated by the British Council, "This purpose of gaining knowledge, of developing a subject that experts can use and of providing basic information for teachers, farmers, inventors and all interested, has always been uppermost at Rothamsted."

Sir John Lawes started the Rothamsted station on his own inherited estate. He used his lands even before creating the research center for farm demonstration work. Whether or not the idea of this work and the establishment of a scientific station originated with him is not certain. Others had proposed similar undertakings at an earlier date. Antoine Laurent Lavoisier, the great eighteenth-century French scientist, who was born just a hundred years previous to the establishment of Rothamsted, started a model farm in 1778, and in 1785, while secretary of the French Committee on Agriculture, he recommended the establishment of agricultural experiment stations.

In the United States the first agricultural experiment station with state support was the Connecticut station, established in 1875. By 1887 there were eighteen stations, although some had only meager support. In that year Congress passed the far-reaching Hatch Act, which gave Federal financial assistance for experiment stations connected with all the land-grant state agricultural colleges established under the well-known Land Grant Act of 1862.

MAPS OF THE U. S. GEOLOGICAL SURVEY

MANY strategic areas in America are being adequately mapped for the first time, using methods three to five times as fast as pre-war methods, William Emory Wrather, director of the U. S. Geological Survey, reported recently to Secretary of the Interior Harold L. Ickes.

Less than half of the United States has been comprehensively plotted, Mr. Wrather disclosed, despite the 167 years of our national existence. Much of the area requiring additional mapping lies in the central and western states. But there are also regions along the coast which have not been mapped to show the actual shape and elevation of land surface, streams and drainage, the location and extent of cities and towns, roads, dams, forests, boundary lines and other culture.

"In certain strategic areas along the coastline," Mr. Wrather reported, "military requirements have resulted in a 60 per cent. increase over last year in the square mileage of mapping produced monthly by the topographic branch of the Survey." Of 228 areas in which mapping was completed last year, 166 were required by the military.

Improved stereoscopic plotting of aerial photographs, called photogrammetry, is only about a third as expensive and much faster than former methods when used under favorable conditions. In effect the procedure brings the terrain right into the laboratory. To get a three-dimensional view, the operator views plates of aerial photograph negatives through an optical system which is basically like the stereoscope through which the older generation once peered for natural-depth scenic views as a parlor pastime.

By moving a small plotting device, called a tracing table, over the map sheet, the operator then makes a pencil drawing of the culture, drainage and contours. A photographic copy of the drawing is then taken to the field for checking features that could not be identified on the photographs and to secure names to be lettered on the map.

Post-war uses, as well as military service, is foreseen for the maps, since they are valuable in planning and executing flood control, river and harbor improvements, power and irrigation projects, highway location and construction, forest administration, erosion control, drainage enterprises and mineral and soil surveys.

STAR IN THE CONSTELLATION OF LIBRA

THE shell of a star in the constellation of Libra, which is not now visible in our evening sky, is composed of many intensely hot layers, each rotating at its own speed.

A layer of nickel in a gaseous state is on the outside of 48 Librae, and titanium and probably manganese, are in the deeper strata, Dr. Otto Struve, director of Yerkes Observatory, reports in the *Astrophysical Journal* for July.

The outermost layers of the shell rotate slowly, while the inside layers revolve much more rapidly, according to the estimate of Dr. Struve. The layers within the shell seem to be slightly expanding at certain times, and contracting at others, adding to the complexity of the action of the stratified shell.

"The star 48 Librae presents a notable paradox," according to Dr. Struve. It combines many of the characteristics of a supergiant and a main-sequence star. The star lying beneath these thin whirling metallic layers seems to be a relatively well-behaved main-sequence B-type star. At present the shell is fairly transparent in the ordinary photographic region of the spectrum, but is essentially opaque toward the violet end.

The spectrum of the star has undergone a distinct change in recent years, reflecting changes within the star itself. During the last ten or twenty years a strong metallic absorption spectrum has developed, showing that the light from the hot center of the star was shining through an increasing number of metallic gases with temperature lower than that of the inner source of light.

The spectrum of 48 Librae is believed to denote a shell in many ways resembling the shell of Pleione as observed in 1940.

THE TREATMENT OF IMPETIGO

FROM a combination of Indian dislike of bandages and medical skill has come a twenty-four-hour conquest of one of the most persistent of skin infections, impetigo contagiosa.

The new treatment consists of placing on the sores a jelly consisting of 25 per cent. sulfadiazine in methyl cellulose. This mixture forms a water-soluble plastic coating over the lesions and obviates the need of bandages. The sulfa drug is effective in healing the surface sores caused by the impetigo bacteria and seldom is more than one application necessary.

Dr. and Mrs. M. Pijoan, together with F. Worman, working at the U. S. Indian Service Nutrition Laboratory and the University of New Mexico, developed the treatment. The research was reported through *Southwestern Medicine*. Since the work was done, Dr. Pijoan has been commissioned a lieutenant in the Navy and is on the research staff at the Naval Medical Research Center, Bethesda, Md.

Treatment of impetigo afflicting Indian patients was found by Dr. Pijoan to be particularly difficult because they consider bandages over skin sores somewhat of a disgrace. The patients tore off the dressings once they were out of sight of the doctor.

A search was begun for a method of treatment that did not require bandages. It resulted in the sulfadiazine-methocel dressing. Earlier researches showed that sulfonamide ointments or microcrystals gave striking results, while sulfa drugs in methyl cellulose had been used successfully in treating burns. The new impetigo treatment was developed from both techniques. Controlled tests on a hundred Spanish-American school children showed the effectiveness of the treatment.

ITEMS

THE Pacific coast of Guatemala probably received a moderate shaking from an earthquake on September 23 that seismological reports, interpreted by the U. S. Coast and Geodetic Survey, locate in the Pacific Ocean near 15 degrees north latitude and 92 degrees west longitude. The seismological stations reporting included St. Louis University, Georgetown University, Spring Hill College, Spring Hill, Ala., and Coast and Geodetic Survey stations at Tucson, Ariz., and San Juan, Puerto Rico.

THE worst infantile paralysis year since 1931, with new cases still occurring throughout the nation at a weekly rate of 1,000 or more, would have taken a much higher toll if the nation had not fortunately been well prepared with money and equipment for fighting the disease. Credit for this life-saving preparedness is given to local chapters of the National Foundation for Infantile Paralysis by the foundation's president, Basil O'Connor. Mr. O'Connor has recently made a transcontinental trip in which he visited some of the stricken areas, including California and Chicago, where the outbreaks have been particularly serious. "Americans helping other Americans with money given freely" during the public celebrations of President Roosevelt's birthday last January 30, Mr. O'Connor said, is what made it possible for communities to have on hand both equipment and trained personnel for immediate action when the epidemic struck.

ALL refiners of 100-octane aviation gasoline may take advantage of a new method of manufacturing that will speed up the production of this essential high-test fuel for warplanes. This process has been developed by the Universal Oil Products Company, of Chicago, who have announced that it will be released to any refiner interested as a contribution to the war effort. The process consists in converting pentane into isopentane, both of these compounds being contained in the base stock from which gasoline is made. Isopentane is an essential component of 100-octane gasoline, but the amount of it in natural gasoline is not sufficient to make aviation gas, so what is called an isomerizing process is necessary to increase the amount by converting some of the normal pentane in the gasoline into isopentane. The process recently discovered does this efficiently and economically, it is claimed, and is reported to be simple, continuous in operation and easily controlled.

THE production of agar on the Pacific Coast and careful use of the quantities available have given America enough agar for the essential bacteriological media needed in medical laboratories. This jelly-like substance made from seaweed was a Japanese product before the war, but agar of bacteriological grade is now being successfully extracted from seaweed of our Pacific Coast. A WPB limitation order prevents the use of the limited supply for industrial, food or therapeutic purposes. Agar industry on the Atlantic Coast is getting underway, but so far its product is not suitable for bacteriological use.