SCIENCE NEWS

Science Service, Washington, D. C.

THE FRENCH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

Press cablegram by Watson Davis

EVER since the invention of telephone, cinema and radio, it has been the dream of inventors to achieve television. Already photographs are sent across continents and oceans as electrical impulses on wires or by radio. Just as photographs speedily projected, at a rate of sixteen a second, tricking the eye, gave birth to motion pictures, so telephoned photographs speeded up would allow seeing at a distance.

The most important address given at the meeting of the French Association for the Advancement of Science which has just closed at Lyons was the announcement by Edouard Belin of his new method for obtaining television. M. Belin is one of the pioneers of telephotography, and believes that he has within his grasp the completion of a practical television apparatus. He explained and demonstrated before the assembled French scientists a preliminary working model. In M. Belin's system the picture or scene to be transmitted is slit into narrow bands of light variation, which impressed by an intricate system of revolving mirrors upon a photoelectric cell are changed into a varying current of electricity. This modulated current, carrying the picture just as the telephone circuit carries the voice, is transmitted by wire or radio to the receiver where an oscillograph, which is an instrument carrying a small swinging mirror, changes the current back into light. The dancing pencil of light, when painted upon a screen by a mirror system similar to that used in the sending apparatus re-creates the original scene at a distance—at any distance to which telephone or radio signals will carry. The details of the perfect synchronism and high speed which are essential for final success remain to be worked out, but M. Belin promises a practical apparatus for the near future, and French scientists hail his achievement. The inventor is now on his way to China to install his still telephotographic apparatus on behalf of the Chinese Government, which is especially interested because of the difficulty of telegraphing Oriental word characters.

Rivaling the Belin television and antedating it is the work of C. Francis Jenkins, a Washington, D. C., inventor who two years ago demonstrated television apparatus to a Science Service representative. Mr. Jenkins uses a novel design of curved prisms cut into the edge of a revolving disc of plate glass to dissect and recreate the scenes he wishes to send by telephone or radio. Other telephotographic methods, such as the one now in commercial use by the American Telephone and Telegraph Company for the transcontinental transmission of still photographs, seem incapable of speeding up sufficiently to transmit the motion essential to successful television.

While physicists have thus been engaged in shrinking the time dimension, archeologists and anthropologists have been unraveling the past of mankind. The principal excursion indulged in by the delegates at the French meeting was to Solutre, the site of excavations revealing the bones and implements of men who lived on the earth during and immediately after the great Ice Age. Solutre is the "type locality" for an Old Stone Age culture characterized by very fine and skilfully worked flint implements and by the beginnings of pottery making. Americans are interested in a pre-history of our race as disclosed by excavations in this region because some of the work here is being prosecuted under American auspices, and because a pioneer student in the art and industry of stone age man, the Abbe Henri Breuil, was recently honored by the National Academy of Sciences by the award of the Daniel Giraud Elliot medal, the highest literary prize in its gift.

One of the most interesting exhibits of the scientific exposition was a motor truck running on waste wood fuel. Gas was generated on board the motor from small blocks of wood and used in an engine that can also run on liquid fuel. The vehicle is thus its own gas plant. Its manufacturers claim that it runs fifty miles on a quarter's worth of fuel.

Photography has invaded the realm of sculpture through a process exhibited by C. Givandan. He makes a bas-relief mechanically with pictorial accuracy. The person sitting for his sculptured likeness is photographed a large number of times with light revealing successive contours of his features. Tracings of these photographic outlines are made on metal sheets, which when cut out and built up make a mould for the bas-relief. Many prominent scientists of France have arranged with the inventor-artist for photosculptures of themselves.

Gland graft methods of the most sensational nature, capable of increasing the world's production of wool and mutton nearly one eighth, were announced at the meeting of the French association, by Dr. Serge Voronoff, famous gland surgeon.

The basis of his experiments were three thousand sheep belonging to the Governor-General of Algeria. Dr. Voronoff implanted an extra male gland in each young ram at puberty. After two years each animal weighed an average of nineteen pounds heavier than unoperated rams. The clip of wool from the grafted rams averaged nine and a quarter pounds, as against eight and three quarters pounds from ungrafted animals. The increased glandular secretion resulting from this operation thus greatly stimulates the growth of hair and also promotes general development. Dr. Voronoff believes that continued grafting will produce new and better breeds of sheep.

The experiments are hailed as economically important, as France is now obliged to spend two billions of francs annually for British wool.

The sheep experiments are an outgrowth of Dr. Voronoff's human gland graft experiments, that caused a

furor in European medical circles when first announced a few years ago. Miraculous results in the rejuvenation of old and worn-out men were claimed, but the statements of the advocates of the new method were hotly contested by its opponents, who declared that the effects were much over-rated and that in any case they were not permanent. Dr. Voronoff, therefore, turned from a field of experimentation which had become too much involved in polemics, and devoted his attention to the lower animals, which he could get in large numbers and upon which he could work without the restrictions indispensable in human surgery.

France, economically hard hit, is turning toward her colonies, particularly those in North Africa, for aid in holding her place as a first-rate power. President Alfred Lacroix stressed the part science must play in the development of Tunis, Algeria, Morocco, Senegal-Niger, Guinea, the Congo, Indo-China and other regions under French control. Life must be made safer and more comfortable in these places, both for the native peoples and for white executives and colonists. For this the sanitarian must combat disease and clean up plague-spots, and the engineer devise protection against the consequences of floods, earthquakes and other natural calamities. The forester and geologist must see that the natural resources of the countries are realized to the full but not wastefully exploited. Knowledge in all branches of biology and chemistry must come to the aid of agriculture. And to bind the colonies to the homeland, all the resources of marine and railroad engineering, of radio, telegraph and all other means of communication must be called upon.

The "turning toward Africa" of France was further emphasized in the selection of Constantin, Algeria, as the place of meeting for the association in 1927.

The development of the material resources of France and her colonies was not the only concern of the French scientists. Dr. G. Dequidt, Inspector-General of the Ministry of the Interior, declared that subsidizing large families is not enough. To bolster France's birth rate he urged selective distribution of desirable aliens and better public health service. France's birth rate, he said, is less than one fourth that of England and only one sixth that of Germany.

The diseases of childhood, chief causes of infant mortality, are being attacked by new serums. Dr. Bonnet and Professor Rochaix explained how serums from convalescent patients are being used to protect children exposed to whooping cough, measles and scarlet fever.

RE-EDUCATION AFTER SLEEPING SICKNESS

CHILDREN whose characters are strangely warped as a result of the European sleeping sickness have crippled brains and may be classed with crippled children, even though they have no visible deformity of body. This new idea in dealing with the serious after effects of sleeping sickness is proposed by Miss Helvi Haahti, a Finnish psychiatrist who has been conducting tests at the Institute of Juvenile Research of Illinois.

The number of children who are left by this disease with overpowering desires to steal, commit sex offenses, lie and run away from home is sufficient to make them a serious social problem, but most cities have made no special provision for their education or re-training.

Miss Haahti reports that as an experiment seven children who had had sleeping sickness were admitted to a special school for physically crippled children, in Chicago, and were treated like the other cripples, with promising results.

Sleeping sickness victims, who were often quiet, well-behaved children before the attack, are usually considered bad because of their strange behavior, and are dealt with accordingly by parents and teachers. In the special school for cripples these children were in close contact with teachers who understood the defects and with children who knew that they were "sick," just like the rest of the class except that the disability was in a different part of the body.

The chief problem is to reestablish the child's good physical and mental habits, which were destroyed during the acute stage of the disease, Miss Haahti states. Typical physical bad habits of these children are a peculiar gait, and jerky, awkward movements of the arms, which indicate the same lack of self control that leads them to fall into violent rages or to steal money from a neighbor.

She finds that "the question which has not yet been sufficiently answered is whether these good habits can be reestablished by careful habit training over a long period of time, or whether the nerve paths were permanently destroyed by the disease so that retraining would not be possible."

SPECIALIZED PARASITES

THIS is an age of specialization, even for parasites. Time was when the word "parasite" was synonymous with all that is considered degenerate and degraded, but this idea is all wrong, according to Dr. R. W. Hegner, of the school of hygiene and public health at Johns Hopkins.

Dr. Hegner has made a long and comprehensive study of the relationships that exist between the microscopic one-celled animals and the host from which they take their living, giving in return such diseases as malaria and sleeping sickness. He maintains that a condition of parasitism represents a specialization to meet the particular circumstances of environment rather than a degration of retrogression. Animal parasites in man or the higher animals frequently become very highly developed, in their adaptation to their peculiar mode of life.

The factors developed during the process of evolution that are responsible for the tolerance of man toward certain parasitic forms and his susceptibility to others are still very obscure, Dr. Hegner will say in a forthcoming issue of *The Quarterly Review of Biology*. Long association has probably brought about changes in both host and parasite which make it possible for them to live together in harmony except under special conditions.

Any disturbance of the carefully built up equilibrium between parasite and host would tend to bring about serious consequences for either. A sudden increase in virulence of the parasites to which the human body had

previously acquired tolerance would spell disaster to the latter while a decrease in the aggressivity on the part of the former or an increase in the resistance of the host would correspondingly prevent infection.

NORTHERN SPRING FLOWERS IN FLORIDA

HUMAN tourists have not been the only northern winter colonists who have found Florida climate and scenery to their liking. The wild-flowers of New England and the upper Mississippi Valley preceded the people of these regions into the hills of the South, probably by many thousands of years, and they are still there. What is more, they preserve to a considerable degree the life-habits of their original homeland, according to Professor Herman Kurz, of the Florida State College for Women at Tallahassee, who is a member of the summer faculty of the University of Chicago.

In his report, which will be published in an early issue of *The Botanical Gazette*, Professor Kurz calls attention to the presence in various parts of the northwestern extension, or "panhandle," of the state of Florida, of disjunct patches, or "islands" of northern plants, inhabiting rich, moist hill forests in the midst of sandy flats and an "ocean" composed of swamps that support a vegetation more typical of the South. Two such "islands" are already fairly well known to botanists; Professor Kurz now calls attention to a colony of "Yankee" plants occupying a third, on the Tallahassee red hills. In such woods, under North-suggesting trees like beech, maple, elm, hickory, basswood and hackberry, typically northern spring flowers can be found, including Jack-in-the-pulpit, green dragon, buttercup, trillium, bloodroot, phlox, Indian pink, Solomon's seal and bellwort, with flowering shrubs like witch hazel and mountain laurel. In such a woodland one could easily imagine himself five hundred or a thousand miles farther north.

It has been commonly assumed, and sometimes stated in botanical writings, that the habits of the northern flowers, which in the North bring a rush of bloom in April and May, had been lost, and that these colonists blossomed at all sorts of odd times. Professor Kurz states, however, that this is not the case. He has made a careful study of the time of blooming of over three hundred of the species in the red hill country around Tallahassee, and he finds that it rises to a climax there almost as marked as the high tide of bloom in the woods of the North. Only the climax comes earlier, as might perhaps be expected, arriving in March and falling off sharply by the end of May. During the rainy winter season, a low point in blooming can be noted, comparable with the enforced dormancy during the snow-bound northern winter. The thing that has led many botanists to assume an indefinite period of blossoming, Professor Kurz states, is the habit of certain weedy roadside flowers, probably more recent arrivals from the North, of flowering even in winter. He found such plants as toadflax, Venus' mirror, plantain, sneezeweed, evening primrose and oxalis in bloom in February and some of them even in January. But these, he believes, constitute an exceptional class, and their blossoming habit has only served to mask the real fidelity of the true woodland spring flowers to the periodical blossoming of their original home in the North.

ITEMS

THE heavy, bulky steam and water radiators may soon be a thing of the past, if the heat cabinets invented by a Wisconsin engineer are widely accepted. The cabinet is constructed of a single U-shaped copper pipe with copper fins, extending all the way across the cabinet and back again, so that air pockets can not form. The total weight of a cabinet is about one tenth that of an ordinary radiator. It is claimed that a room can be made warm in ten minutes. Where heat is not wanted in a room a damper shuts off further radiation.

A NEW method of producing a very hard steel skin on chromium, aluminum and manganese steels has been worked out by scientists of the Krupp works at Essen. The metal to be so treated is provided with an atmosphere of nascent nitrogen at temperature under 1,100 degrees Fahrenheit. Allowed to cool slowly, the steel actually absorbs some of the nitrogen, which results in a measurable increase in volume of the steel. It is claimed that the process, which can be employed with the ordinary quenching methods, produces steel which is especially suitable for machine parts working at high temperatures.

SHOULD the bars of the immigration quota law be let down to admit foreigners of outstanding promise or talent into the United States? This proposal that it might be advisable to ignore geography in the case of unusually brilliant individuals who want to come into this country is made by Dr. Carl C. Brigham, associate professor of psychology at Princeton University. Dr. Brigham has for some time been engaged in the development of mental tests for use with immigrants. In a report on the progress of this work, to appear shortly in industrial psychology, he points out that such tests might be put to good use in spotting gifted immigrants, and that by a slight revision of the quota law this country "would be assured of a constant supply of men and women of exceptional value." The chief problem now confronting psychologists who are devising tests for foreigners is to make the instructions given by the examiner clear to people speaking all sorts of languages and dialects. Experimenters are trying to avoid the use of language altogether in testing the mentality of foreigners and are using pantomime instructions only. That language is not necessary in psychological experiments has been proved, he says, by animal experiments which have regularly been carried on without discourse between the human experimenter and the animal he observes.

THE "puncture vine," the worst enemy of tires with which California motorists have to contend, has met its match. Treatment of the vines with a cheap mineral oil result in their speedy death, and a second treatment finishes the destruction of the troublesome burs that attach themselves to the treads of tires and work their wiry points through the tubes. The scientific name of the vine is *Tribulus terrestris*, which means "trouble of the earth."