SCIENCE NEWS

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PARESIS AND MALARIA

FORTY years of devotion to a theory, literally a lifetime of work, stand back of the achievement for which Professor Julius Wagner-Jauregg, of the University of Vienna, has just received the 1927 Nobel prize in medicine.

It was as far back as 1887 that Professor Wagner-Jauregg published his first paper, explaining his fundamental idea that febrile disease had an ameliorating effect on paralysis. Even then the idea was not new, for observers as long ago as the time of Hippocrates and Galen had noted that intermittent fevers produced favorable effects on the paralytic insane. But the Viennese psychiatrist took the clinical observations of his predecessors and contemporaries, added his own and built up a theory that he believed in. For years he struggled to collect data to prove his theory. He tried to induce curative effects on hopeless paralytics by inoculations with typhoid, tuberculin erysipelas and intermittent fevers.

Different workers with mental disease observed that in the tropics where malaria was frequent and syphilis extraordinarily common among the native population, paresis, the deadly form of paralysis that often occurs in the last stages of syphilis, was unknown. This state of affairs was specially well demonstrated in both Java and in China. Furthermore, malaria presented the special advantages, for clinical use, of being recurrent—it could come back at the spirochaetes in the body enfeebled by the first malarial attack and subject them to uncomfortably high temperatures again and again. It could be administered in a relatively mild form and cured up with quinine. Accordingly in 1917, Professor Wagner-Jauregg made his first trial of malaria with nine paralytic patients. The results were encouraging. He continued the treatment. Other institutions followed, for it must be remembered that up to this time there was no real alternative for paralysis but death. To-day the application of the method is practically world wide in the more advanced institutions where the paralytic insane are housed.

Though his grave and rather grim features have earned him the typical student-applied nickname of the "wooden statue," Professor Wagner-Jauregg's lectures are enormously popular. An occasional twinkle belies his dour expression, while one of his former students declares that he is not above an unprofessorial joke. Those who have worked with him in Vienna describe him as a marvelous physician and skilled clinician with an infinite capacity for painstaking research.

Further developments of the malarial treatment in which he is particularly interested at the present time are the preventive use of malaria in syphilitic patients before they develop paresis and a project for the finding of some method whereby malarial blood can be shipped from laboratory to laboratory. This feature is of special importance on account of the hit and miss chances of institutions finding a suitable malarial case just when they need it for inoculation of their paralytics. With all the health propaganda against the mosquito, good useful malaria cases of the right type are getting hard to find in the more enlightened countries.

TUBERCULOSIS INFECTION

IF a man or woman, who is united to a matrimonial partner with open tuberculosis, is below par physically, his or her chances of acquiring the same dreaded infection are about one in six.

This is the conclusion Dr. Arnold Minnig, of Denver, has drawn from analysis of data from over 5,000 tuberculosis cases he has observed at the Denver Municipal Tuberculosis Dispensary. Out of a total of 5,067, 1,888 cases were married or widowed. Of these, 319, or 16.8 per cent., Dr. Minnig has reported to the American Medical Association, were cases in which both consorts had active tuberculosis or one or the other died of the disease.

These figures in the opinion of the Denver physician refute the theory held by some medical men that adult infection with tuberculosis is not possible. He points out that only eleven cases of the 319 were natives of Colorado, which has a notoriously healthy climate. Since five of these died, the unpleasant possibility is suggested that a healthy climate may have the adverse effect of preserving its inhabitants from the immunizing contact with tubercle bacilli that is found in large cities, so that when such unimmunized individuals come in touch with the disease they succumb with startling ease.

Dr. Minnig's figures were drawn from dispensary cases, which necessarily represent the lowest stratum in life. Consequently, he states that "this investigation gives us a most important lesson; the lower the standard of living, or the more unhygienic the surroundings, the better the culture medium for the tubercle bacillus."

Hygienic living and intelligent prophylaxis are the weapons to be used to prevent tuberculosis spreading in families, just as they are everywhere else that the great white plague is found.

FOSSIL LEAVES IN YELLOWSTONE PARK

NEW evidence that magnolias, sycamores and chestnut trees once flourished in the region now known as Yellowstone National Park was uncovered by the blasting away of a ledge to widen a section of the park's loop road between Mammoth Hot Springs and Camp Roosevelt. Tons of rock bearing the fossil imprint of leaves and twigs, principally magnolia and chestnut, were brought to light. According to Professor H. L. Mason, of the University of California, the rock bearing the fossils represents the material accumulated in a forest about four million years ago, during a volcanic eruption which

destroyed the trees and buried the leaves upon the ground. Impressions of the leaves then became a part of the solid rock. Judging from the abundance of chestnut leaves, the chestnut apparently was one of the most common trees in this prehistoric forest.

The leaves in the rock show minutely every stem and vein, and each needle-like point in the serrate edges of the chestnut leaves is wonderfully preserved. Even the work of insects is as clear in the hard stone as it would have been in the green leaf itself.

To-day the magnolia thrives in the southern portion of the United States, and the chestnut is not found west of the Mississippi. It seems probable that these trees and the redwoods, which also are known to have lived in the Yellowstone region in past ages, were driven out by the building up of the mountains which to-day are a suitable habitat for the hardy pines and aspens.

A NATIONAL PRONGHORN SANCTUARY

A GREAT fenced area devoted to the perpetuation and welfare of the pronghorn antelope was advocated by Paul G. Redington, chief of Biological Survey of the U. S. Department of Agriculture, in his address before the meeting of the American Game Protective Association.

This species, which is a unique American animal and not closely related to the Old World antelope, was formerly even more numerous than the great bison herds that once roamed the plains of the West, but reckless hunting almost wiped it out. Although it is now rigidly protected, its numbers have been so far reduced that it has a hard time making headway against wolves, mountain lions and other predatory animals, not to mention poachers who snipe at it in defiance of the law. Some of the states have taken measures for the preservation of the pronghorn, but aside from the national parks there are no federal refuges. Dr. Redington is of the opinion that a national sanctuary on a large scale can be developed without infringing on the rights of the various states.

Dr. Redington expressed himself as frankly disappointed at the lack of progress in the development of the migratory game bird refuge system. A few separate steps have been taken, he said, notably the establishment of the great Mississippi sanctuary, but this country has not lived up to the obligations it has assumed in this matter. Agreement among sportsmen and other persons concerned in the duck problem must be reached in order to make progress possible. "The sportsmen and bird lovers of this country have come to a place where they must 'fish or cut bait' on the matter of federal refuges for migratory birds."

TRAFFIC SIGNS AND SIGNALS

TRAFFIC signs and signals should be made so simple and so uniform that guiding an automobile would become as automatic as walking. This is the difficult goal for traffic engineers set before the Highway Research Board in a report by Dr. Knight Dunlap, professor of psychology at the Johns Hopkins University.

"Drivers will never be trained to the point of an automatic, unreflecting 'stop' on the red light so long as other uses of red in signals are retained," Dr. Dunlap said. "Fatal accidents have occurred from use of red lanterns on road obstructions. But the more important factor in such cases is that the misuses of signals prevent the proper training of the motorist and are therefore conducive to accidents at other points. It is entirely feasible to do away with the use of red for all traffic signs not meaning 'stop'."

Many types of road signs lead to bad habits on the part of drivers, the psychologist pointed out. Frequent use of "dangerous curve" markers at gentle curves, for example, cause motorists to ignore such signs at points where the warning is needed.

Drivers hunting parking space in busy streets often put themselves and other people in danger because of the complex process involved in finding out where and how long they can park in a given street. A recent detailed examination of the parking signs about Washington streets was cited by Dr. Dunlap as showing how colors and shapes are used indiscriminately, so that they mean nothing definite, and how the words on signs are not standardized enough so that the motorist can grasp the idea with a minimum of reading.

By a system established in Baltimore the driver can see nearly a block away from a given place whether he can park there or not, and if so how long, and this system is proving itself sufficiently satisfactory to serve as a model in other cities.

Standardization is urgently needed in traffic signs and signals to increase safety, but bad standardization is worse than none. Before standards are established there should be experiments and investigations to establish facts about matters which have been too much subject to theory and guess.

NEWLY DISCOVERED COMET

THE first bright naked-eye comet of recent years has been found by an amateur astronomer in Australia, according to communications received here by the Harvard College Observatory, American clearing house for astronomical discoveries. The discoverer was not a professional astronomer, but an amateur star-gazer, J. F. Skjellerup, who once lived in South Africa, where he made previous cometary discoveries. Not only is the Skjellerup comet the brightest that has been seen recently, but it brings this year within one comet of the record of 1926, when eleven were observed, more than ever before. The new visitor is this year's tenth, so that it will be recorded in astronomical annals as comet 1927j. When he picked it up on Saturday, December 3, the comet was in the constellation Norma Euclidus, or "Euclid's Rule." This is a star group that is not visible to inhabitants of north temperate countries, but at Melbourne it is nearly overhead at certain times of the year. This month, an Australian would see it low on the eastern sky shortly before sunrise, so that its poor position, even for southern countries, probably accounts for the fact that it reached third magnitude before it

was found. On a clear dark night the keen eye can see objects about as faint as the sixth magnitude.

The comet's exact position when found, expressed in the astronomical equivalents of latitude and longitude, was 16 hours, 12 minutes and 12 seconds right ascension, and 53 degrees 57 minutes south declination. It had a tail three degrees long, or about six times the apparent diameter of the full moon. However, as it was moving towards the sun, it will soon be invisible even in southern countries, as the glare of that brilliant body obscures even the brightest comets.

Just what may happen to the comet is problematical. To determine its orbit, at least three separate observations of its position must be made. Whether these can be obtained before the Skjellerup comet disappears in the sun's glare remains to be seen. If not, the object may be lost, as has happened in the past. In the summer of 1921, Dr. W. W. Campbell, director of the Lick Observatory of the University of California, was sitting in front of his house with some friends watching the sunset over the mountains. One of the party noticed a strange bright object in the gathering dusk just after the sun had descended below the horizon. As no known object of such brightness, which must have been first magnitude or more, was known in such a position, it is believed to have been a comet. The next night, however, it had vanished in the sun's rays, and was never seen again.

However, if all goes well with the Skjellerup comet it should go around behind the sun, and then reappear on the other side. If that is the case, it should turn up in the neighborhood of Aquila, the eagle, which is now seen in the western sky shortly after sunset, though without exact data on its orbit, any prediction of its behavior is most uncertain. After that it may mount still higher in the night sky, and so perhaps the coming months will be enlivened by the presence of a brilliant comet.

ITEMS

CHILDREN are not being born in Europe fast enough to keep the man power of the nations on the increase, and after only some 20 or 30 years more the western nations of Europe will have reached the peak figure of their population. These are the conclusions just announced by Dr. Swen Brisman, professor of political economy at the Commercial College of Gothenburg. In all European nations the birth-rate has declined since 1913, with the exception of the Netherlands, and even there the trend is now believed to be downward. Figures set by Dr. Brisman as the maximum to which European countries may attain before the tide of population starts to turn are as follows: France, present population in millions, 40.3, future, 42.0; Great Britain, present, 43.8, future, 49.0; Sweden, present, 6.1, future, 6.1; Norway, present, 2.8, future, 3.3; Denmark, present, 3.4, future, 4.3; Finland, present, 3.3, future, 4.7; Switzerland, present, 3.9, future, 4.4; Belgium, present, 7.7, future, 9.3; Netherlands, present, 7.4, future, 10.7; Germany, present, 62.6, future, 77.0; Italy, present, 40.0, future, 62.0; Spain, present, 22.0, future, 35.0.

AFTER years of painstaking scientific research an authoritative international agreement has been reached involving a single temperature scale, a fundamental standard of length and a consensus of opinion concerning the basis of the world's electrical units. The agreement took place at the Seventh International Conference on Weights and Measures, held recently at Paris, the United States being represented by George K. Burgess, director of the Bureau of Standards. The proposition of the United States to define the length of the international meter in terms of the wave-length of the red radiation from the cadmium lamp was also tentatively adopted, the final wording of the recommendation as decided on by the conference being an improvement on that submitted by the United States. Thus there is established a permanent natural standard of length, easily reproduced and capable of being used in the most precise measurements. The relationship between the international meter and the wave-length of red light from cadmium vapor is: one meter equals 1,533,164.13 waves.

RADIO engineers now have to find a way to prevent their transmitted waves from going around the earth, thus illustrating the great advances that have been made in radio in recent years. Not so long ago, their problem was to get the signals across a gap of a few thousand miles. Now they have a problem because the signals sometimes not only go the shortest way between the transmitting and the receiving stations, but also go around the long way, causing an echo. They may keep on going and travel around again and again, causing a series of echoes. This effect has been noticed in a series of experiments carried out at Geltow, recently, by E. Quaeck. Records were made of signals received from Rio de Janeiro. It was found that the signals were always accompanied by this echo, and sometimes by several of them. The significant thing was that when there was a series they were a multiple of a seventh of a second after the direct signal. As radio waves, which travel with the speed of light, take just a seventh of a second to encircle the globe, it seems to indicate conclusively that the series of echoes is caused by the waves going on around and around the earth many times.

BY holding a stop-watch on 10 busy three-year-old boys and girls, a psychologist at McGill University has found that a child of this age is usually interested in one thing for just about eight minutes. After that, some new amusement or occupation must be produced. Even when they are most absorbed, three-year-olds at home or at nursery schools cannot be expected to spend more than half an hour at one kind of occupation according to K. M. Banham Bridges, who describes the experiment in a report to the Pedagogical Seminary. Boys in the experiment liked best building with large bricks, and other occupations in which they could use the entire body freely. The girls preferred sitting at a table matching colors or fitting cylinders into different kinds of holes. The girls showed an interest in a wider variety of activities than the boys and their interest in a task lasted a little longer, the psychologist reports.