SCIENCE NEWS

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THE FRENCH GUINEA STATION OF THE PASTEUR INSTITUTE

PROFESSOR ALBERT CALMETTE, whose tuberculosis experiments have attracted international attention, has been instrumental in establishing at Kindia in French Guinea a branch of the Pasteur Institute that is devoted exclusively to experimental work with monkeys. Since captive apes of the higher types nearest man, so necessary in medical experiments with the major diseases, succumb with fatal ease to the plagues of civilization, this laboratory has been fitted up for work with them under the best conditions of their natural environment.

Whole families of monkeys are bred and reared under hygienic conditions, in all other respects as much like their native haunts as possible. Medical experts administer vaccines and serums to protect them against pneumonia and the common diseases that are current among animals in central Africa. Natives collect their customary foods for them from the jungle and scientists watch their intellectual development. In short no effort is spared to keep the ape colony well and happy.

The results have thus far been most gratifying and few animals have been lost from intercurrent infections. The experimental work with monkeys on tuberculosis, which could not be carried out successfully in Paris because the high prevalence of the disease in the metropolis constantly gave rise to accidental infection, has here gone on with great success. Dr. J. Wilbert, on the staff of the Pasteur Institute at Kindia, has found that not only are chimpanzees quite uninjured by Professor Calmette's anti-tuberculosis vaccine but they fail to contract the disease when placed in isolation with other "patients" in its advanced stages.

The immunity conferred by the vaccine lasts over a year, according to Dr. Wilbert, and can be renewed by fresh doses. The problem that naturally presents itself next is the perfection of a vaccine that will produce more permanent effects.

The Kindia monkeys will be used in experiments, says Professor Calmette, to determine the cause and treatment of all the diseases against which man is not yet effectively armed. Kindia furnishes unrivaled facilities both for the psychologist to observe the family life of chimpanzees and for the physiologist to study the mechanism of their interior, he declares.

THE STUDY OF CANCER

LIVER extract is the latest addition to the long list of weapons with which medical science seeks to stem the rising cancer death rate.

The work with liver extract, which in the United States has been used with some success in treating high blood pressures, was initiated by Dr. John R. Howitt, of the medical school at the University of Western Ontario. He based his theory on the fact that since the liver is disproportionately large during embryonic life, when it does not secrete bile, it must have some other function. Its relatively large size suggested that it might exercise some influence on the extraordinary growth that the human body undergoes during the embryonic period. As cancer is a manifestation of abnormal cellular growth, Dr. Howitt decided that the effect of the active principle of liver on such a growth would be worth trying.

In his first experiments he injected extracts from the livers of pig embryos into cancerous mice. The results were so encouraging that liver extracts, this time from beef, were tried on hopeless cases of human cancer too far gone for operation.

"In one patient there was a complete disappearance of the tumor mass," says Dr. Howitt in a report of his results to the scientific journal, *Nature*, "in others still under treatment a reduction in the size of the growth has been noted. In every case the progress of the disease has been arrested and the life of the patient prolonged beyond that of the prognosis given before the treatment commenced. No radical claims are advanced for this treatment, but the results obtained clinically have warranted a more extensive investigation which is now being carried out at the University of Western Ontario, London, Ont., and the McGregor-Mowbray Clinic at Hamilton."

Though the advance is slow, the concentrated forces of scientific research are closing in on modern humanity's most dreaded plague. The lead treatment of Professor Blair Bell, of Liverpool, has likewise made considerable progress in the last few months. Sufficient improvement has been made in the form of lead used to warrant its being put on the market in both England and the United States in the near future. On account of the poisonous character of all lead compounds, only cases on which all usual methods are powerless are accepted for treatment.

A NEW FUNGUS PEST OF BEANS

AMERICAN bean growers, already seriously handicapped by the Mexican bean beetle and several other serious pests, are due soon to have still another to combat, if events bear out indications from the southeast part of our country. This pest is already established there and is spreading rapidly.

The new trouble-maker is a fungus, Macrophoma phaseoli, which was not known to exist in this country before 1923. In that year it was discovered in South Carolina. During the next year it was not heard from but in 1925 it was again found during a wet spell in parts of South Carolina. At this time it threatened to become very serious in the infested regions but dry weather intervened and it nearly disappeared. This

year the disease has been found thus far in Georgia, Mississippi, and in two or three places in South Carolina.

The virulence of the disease and the wide distribution it has attained strongly indicate that it will quickly spread over the bean growing sections of the country and take a heavy toll in moist seasons. Whence it came to this country, or how, nobody knows. And nobody knows where, or how, or whether its present spread will be checked short of the boundaries of the continent.

The disease might appropriately be called "ashy stem blight," as this phrase describes its appearance. Affected plants are diseased from the ground well out into the branches. The plant dies and these parts assume the gray color characteristic of dead bean stems. In the meantime, however, the fungus, which has been growing within the tissues of the plant, produces a multitude of tiny fruiting bodies. These appear as minute black dots on the gray background; and the result is a characteristic ashen appearance quite different from that of any other bean disease.

THE ALCOHOL CONTENT OF BREAD

PROFESSOR NICHOLAS KNIGHT and Miss Violet Simpson, chemists at Cornell College, Iowa, reported to the American Chemical Society that they had collected twelve samples of ordinary bread from bakeries and housewives' ovens, and after chemical analyses found that the alcohol content in this prosaic food varied from .04 to 1.9 per cent., the latter quantity being well above the one half of one per cent. limit set by the well-known prohibition statute.

The alcohol content of a loaf of bread varies with the kind of yeast used, the time it sets, and the temperature of baking. Because of this fact, the jail keeper at Tekamah, Nebraska, would have difficulty in ascertaining the legal status of any meal served to his bread and water prisoners during their 20 days on this ration.

Whether these prisoners are getting sufficient nourishment is a question which is attracting considerable attention. If the men are in reasonably good physical condition, they are in no danger from being restricted to such a diet, in the opinion of Joseph C. Murphy, of the U. S. Bureau of Chemistry. Mr. Murphy has been engaged in a series of experiments on rats, to test the effects of a diet of white flour as compared with a diet of whole wheat.

"An individual could live more than a month without food," said Mr. Murphy to-day. "So that there is no question of serious consequences following 20 days on bread and water. An individual who ate nothing but bread, especially white bread, for a long period of time, say a year, would probably suffer from malnutrition."

Here again, a bread and water diet turns out to be more complicated than it looks, since there are many kinds and qualities of bread. R. M. Allen, of New York, director of the research laboratory of a large baking company, has reported that animals fed exclusively on bread and water have grown, thrived and reproduced to the seventh generation. The bread used in this experiment was white bread, to which milk, lime salts, and an extract of the wheat germ were added.

ABILITY OF DIFFERENT RACIAL TYPES

THE tradition that those people who belong to the blond Nordic race are mentally superior to the darker haired types of human being is hard hit by intelligence tests which have been given to 5,500 New England school children of foreign-born parents. The investigation was conducted by Dr. Nathaniel M. Hirsch, formerly a fellow of the National Research Council, with a view to shedding light on national and racial differences in New Americans.

Dr. Hirsch strongly attacks the current hypothesis that differences in intelligence of people in this country can be explained on the grounds of their racial types. He points out that during the past 3,000 years, migrations and intermarriages have blended the three distinct European racial types, the fair, long-headed Nordic, the brown haired, round-headed Alpine, and the dark haired, long-headed Mediterranean; so that in no part of Europe to-day is there even approximately a race of one of these pure types. The differences among Europeans of to-day are more national than racial, he finds. Each national group has a distinct personality, as a result of its culture and its heredity, and the different nations show marked differences in intelligence.

The children tested were all attending public schools in four factory towns of Massachusetts with the exception of 449 negro children from Tennessee. In a report of the results, just issued, Dr. Hirsch states that Polish Jews averaged the highest in intelligence, the next in order being Swedes, English, Russian Jews, Germans, Americans, Lithuanians, Irish, British Canadians, Russians, Poles, Greeks, Italians, French Canadians, Negroes and Portuguese.

"The intelligence of the national groups showed that there is no connection between high intelligence and the possession of so-called Nordic blood," said Dr. Hirsch. "The eight national groups that were superior in intelligence consisted of two national groups that have been called Nordic, the English and Swedes; two groups that have been thought to possess 60 per cent. or more of Alpine blood, the Germans and Lithuanians; two quasi-national groups of Jews; one quasi-national group of so-called Mediterranean blood, the Irish; and one national group that is a composite of all four bloods, the Americans."

Dr. Hirsch believes that "the American people have paid far too little attention to the effects that vast immigrations have had in history." "Our immigration policy now and for the next two or three generations," he says, "should be based primarily upon the still present opportunity of making a *natio-race* and a nation from a hodge podge of *natio-races* and a state. If it is necessary to make the United States immigration proof in order to bring this about, the end in this case justifies the exclusion of all immigrants.

"There is no doubt that some blendings of *natio-races* would be more productive of new, energetic, varied, and competent individuals than others, and with wise guidance and some foresight the heterogeneous population of the United States could produce a *natio-race* of high capacity."

THE SAN DIEGO ZOOLOGICAL SOCIETY

THE San Diego Zoological Society, which started in 1922 to collect animals, has developed an international business in export and import of animals.

The most important trade animal they have is the sea-lion. This year to-date 57 sea lions have been shipped, twenty of which went to Europe. Six more will be shipped to Japan during September. The sales of these and the other animals this year have been from the zoo's own product, while other deals are handled by the zoo as agents. Offspring of the recently acquired sea-elephants from Guadalupe Island are in demand by all the zoos in the world and Dr. H. S. Wegeforth, president of the society, is in receipt of many letters requesting specific information from municipal parks and scientists.

One pair of breeding lions, 10 years old, have furnished 44 offspring to the zoo, 42 of which have been sold, with two cubs remaining. Many of the seals, snakes, lions and other felines are sold to Carl Hagenback, of Berlin, a regular customer. The entire stock of animals in the San Diego Zoo at the present time is worth $80,000. As breeding progresses only a restricted few are retained for local study and exhibition purposes.

The bar-less grotto, or "sage" invented by the Hagenbacks of Germany, is put to good use owing to the mild climate. Eventually all the cat and canine specimens will be so housed.

More bear grottoes, dens for wolves, cyotes, raccoons, badgers; small cages for the rodents, small quadrupeds, and cages for birds, are being installed. A huge hippopotamus "compound" will be erected soon. The sales of the animals are expected to return a good profit.

Another division of the San Diego zoo industry is the making of anti-rattlesnake-bite serum. Recently Harvard University designated the zoo reptile department as one of the units of the institute, as exclusive manufacturers of antivenom in the United States. The poison is extracted from the fang-sack of the rattlers, of which the zoo has a fine stock, and the serum distributed from it. This serum is to be packed in portable cases and sold at little more than cost to hikers and outdoor workers for first aid reserve.

The zoo offers prizes for the delivery of rattlesnakes to the reptile house to be used for study. Construction of a new zoological hospital and research building is now under way which will be open to the scientists of the world.

ITEMS

IN the future compact little packages of dried orange juice will probably form an essential part of ships' supplies. It is well known that citrus fruits are rich in vitamin C which has the property of preventing scurvy, a disease from which sailors on long voyages used to suffer greatly in years past. Recent experiments have shown, according to a report about to be published in the *Journal of Biological Chemistry*, that orange juice can be dried and still retain its health-giving vitamins after long periods of time. A mixture of orange juice and sugar, when removed from a partial vacuum where it had been left for five years, still retained its power to prevent scurvy in guinea pigs living on a diet otherwise free from vitamin C.

HENS given vitamin A in addition to their regular diet not only hatch more chicks, but are healthier themselves and lay bigger and better eggs. Dr. Arthur D. Holmes, of Boston, told of the effect of feeding vitamin-rich cod liver oil to domestic fowl, at a meeting of the American Chemical Society at Philadelphia on September 10. Rhode Island Red pullets were given doses of cod liver oil each day and as a result Dr. Holmes found that they laid more eggs. The eggs themselves were larger than usual and their fertility was greater. Fewer eggs contained objectionable blood spots. The greater number and size of the eggs did not make nervous wrecks of the laying hens. On the contrary they showed increased vitality and did not lose weight during the tests. They had a greater resistance to diseases, for fewer of the vitamin-fed ones died than the ones who lived on the normal hen diet alone.

How to make gasoline from the limbs, stumps, knots and tops of trees as well as from sawdust, shaving, and other wastes at lumber mill was described at the meeting of the American Chemical Society by Jacque C. Morrell of Riverside, Ill., and Dr. Gustav Egloff, of Chicago. Statistics show, Mr. Morrell pointed out, that 75 per cent. of the standing tree is wasted when it is converted into lumber, and it is in the interest of conservation to find suitable methods of using these waste products. Mr. Morrell and Dr. Egloff reduced sawdust and other wood wastes from Douglas fir into tar by heating in closed vessels without access to air. Then by means of a chemical process known as "cracking," which is used in the making of gasoline from crude oil, the wood tar was split up into various products such as light volatile oils suitable for motor fuels, solvents, paint thinners and other substances. A considerable portion of the liquid motor fuels needed in the future could probably be supplied by the utilization of these wastes.

A LARGE electro-magnet attached to the rear end of a truck has proved highly satisfactory for picking up nails and scrap iron from state roads, according to officials of the State Highway Department. The magnet, attached to a 5-ton truck, was set four inches above the road, and on the first trip of 5 miles it picked up 150 pounds of miscellaneous scrap metal, including nails, bolts, nuts and wire. On three trips over portions of the Yellowstone Trail over 600 pounds of nails and scrap iron were picked up.