



Science News-Letter

The Weekly Summary of Current Science

Edited By *Watson Davis*



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MEDICINE

Tuberculosis Vaccine for Monkeys and Babies

By MARJORIE MACDILL

Will the next generation of school children have to present certificates of vaccination for tuberculosis as well as for smallpox? Will the great drop the white plague death rate has taken in the last twenty years, be still further accelerated by artificial immunity acquired through vaccination?

That these contingencies are within the range of probability is indicated by the fact that thousands of babies born in tubercular homes in the slums of Paris have had their chance of survival augmented 25 per cent. by inoculation with tuberculosis vaccine, according to reports from the Pasteur Institute.

Medical men in years past have dreamed of producing a strain of tubercle bacilli so weakened that its power to provoke virulent symptoms would be lost but which would still be able to confer power to resist the disease. Prof. Albert Calmette of the Pasteur Institute in Paris believes that he has achieved such a substance in his famous vaccine, BCG.

BCG is a kind of half-starved strain of tuberculosis germs that have been grown for many years in test tubes on the unappetizing diet of beef bile. Somewhere in the succeeding generations raised in this state of semi-starvation the bacilli have lost their disease-producing powers and yet retain a certain amount of their capacity to call forth disease-resisting antibodies when injected into the human system.

First Prof. Calmette and his associates tried out their new vaccine on laboratory animals including monkeys. Monkeys are naturally the most logical animals to work with in experimentation of this kind because they are man's closest rela-

tives from the point of view of physiology. Unfortunately, Paris is so rife with tuberculosis that the chimpanzees and other of the higher types of monkeys that live habitually only in the tropics, were perpetually succumbing to naturally acquired intercurrent infections.

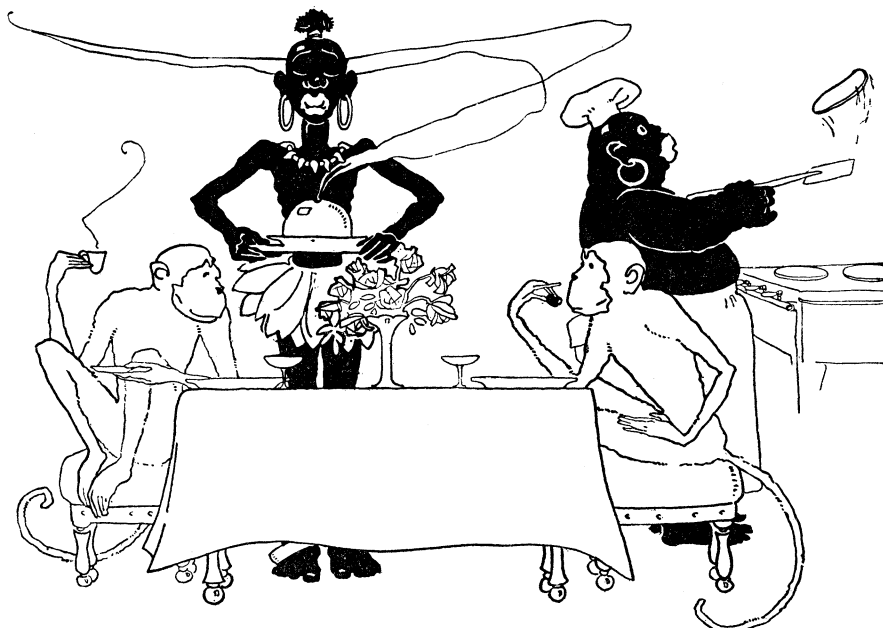
In order to know just what the vaccine could do in the way of prevention and protection, it was absolutely necessary that the diseases to which the monkeys were subjected be under control of the experimenters.

Tropical monkeys, however, do not take kindly to civilization or to a cold climate and will die off at the slightest provocation. Prof. Calmette decided that to attain really accurate results it would be necessary to transfer the scene of simian activities in tuberculosis to the jungle regions whence they came. Through the cooperation of the governor general of French West Africa

a park-like section of land at Kindia in French Guinea was acquired for the Pasteur Institute as a site for a laboratory of animal experimentation.

Such a laboratory was accordingly built and fitted up for work with the "chimps" and higher apes under the best conditions of their native environment. Since 1924 whole families of monkeys have been bred and reared under the most hygienic circumstances 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 make their days on earth happy and every member of the monkey

(Just turn the page)



DESSERT IS SERVED. Will the gentlemen have coconut a la mode, or perhaps date soufflé?

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Tuberculosis Vaccine

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colony is supervised as carefully as the children in an up-to-date experimental school.

The results thus far have been most gratifying and few animals have died from infection from outside sources. Dr. J. Wilbert on the staff of the Kindia branch of the Pasteur Institute declares that the chimpanzees are uninjured by Prof. Calmette's anti-tuberculosis vaccine and that they fail to contract the disease when placed in isolation with other "patients" in its advanced stages. The immunity conferred by the vaccine, he states, lasts over a year, and can be renewed by fresh doses.

Incidentally, according to a statement recently issued by Prof. Calmette, the Kindia monkeys will be used in experiments to determine the causes and treatment of all the diseases against which man is not yet effectively armed, as well as in tuberculosis investigations. Indeed, the Kindia laboratory furnishes unrivaled facilities both for the psychologist to observe the family life of chimpanzees at close range and for the physiologist to study the mechanism of their interiors.

In the meantime Prof. Calmette after careful experimentation with other animals, felt that he had sufficient basis to justify carrying out vaccinations on babies born in the slum districts of Paris where tuberculosis in the family made infection of the new born infants almost inevitable. The results were encouraging and many babies in poor families, particularly those with tubercular mothers, have been treated in Paris and other big industrial cities in France.

Records kept by Prof. Calmette and his associates indicate that less than one in a hundred of the inoculated babies died before they were a year old in spite of living in families in which were one and sometimes more members in severe stages of the disease. Children of the same age as those in the inoculated groups and living in the same sort of bad surroundings were left untreated and held under observation as controls. It was found that as many as twenty-five in every hundred such groups contracted tuberculosis and died before they reached the twelfth month.

It must be distinctly understood that BCG is not a cure for tuber-

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STUDY HELPS FOR SCIENCE CLASSES

These articles will be found to be especially useful in class work

GENERAL SCIENCE

Now is Your Chance to Photograph Meteors, p. 149. Buddhist Art Like Greek, p. 147. Oldest Maya Ruin, p. 155. An Unsolved Cipher, p. 157. Anniversaries of Science, p. 159. Articles marked with * in classification below.

BIOLOGY

Tuberculosis Vaccine for Monkeys and Babies,* p. 145. Always Starting Something, p. 153. Nature Ramblings, p. 155.

HYGIENE

Tuberculosis Vaccine for Monkeys and Babies,* p. 145. The Menace of CO,* p. 155.

CHEMISTRY

Fluid Fuel, p. 147. The Menace of CO,* p. 155.

PHYSICS

Measure Magnetism of Atom, p. 155.

(This will fit on a 3 x 5 card.)

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News-Letter Features

Born over four years ago, on March 13, 1922, of the demand and interest of those individuals who had caught a glimpse of *Science Service's* news reports to newspapers, the SCIENCE NEWS-LETTER has since proved interesting to laymen, scientists, students, teachers and children.

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Regular articles tell of the happenings in the *skies* and in the great *outdoors*.

Photographs aid in the telling of the week's science.

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The new heading on the first page of this issue has incorporated in it representations of two of the plaques that decorate the building of the National Academy of Sciences and the National Research Council in Washington, in which the offices of Science Service are located. The one on the left represents "Light" and the one on the right "Darkness."



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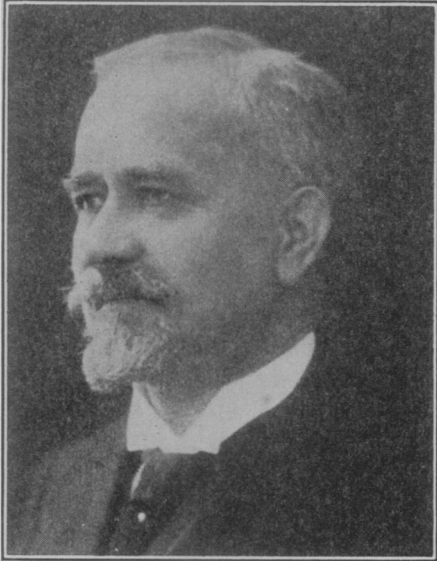
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PROF. ALBERT CALMETTE of the Pasteur Institute whose anti-tuberculosis vaccine has helped thousands of French babies to withstand the TB of Paris slums.

Tuberculosis Vaccine

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culosis but the work at the Pasteur Institute indicates that vaccinated individuals may be protected by it for a certain length of time even though in close contact with severe cases. Physicians in other countries in Europe and in French colonies in Africa and Asia are cooperating with the Pasteur people. At the end of June, 1926, over 11,000 babies of many nationalities and colors had been treated with the new vaccine. It is usually administered by mouth and is given only to new-born babies when they are but a few hours old so that their opportunities to become infected will be reduced as much as possible.

Prof. Calmette maintains that the membranes of the intestines are more permeable during the first two weeks of life than they are at any other period. Consequently it is argued the vaccine administered at this time gets into the general circulation more quickly than would be possible later.

The French scientist's unfortunate experiences with monkeys in tuberculosis work at Paris has led to the establishment of one of the most unique buildings in any modern metropolis, not even excepting the model zoos of New York, London and Berlin. It is, in fact, a monkey house with all modern improvements, that supplies every simian comfort possible in a chilly northern climate. This comfortable structure of glass and concrete stands in the grounds of the Pasteur Institute at Paris and was made possible through

a gift from Princess Marie of Greece, who has dedicated it to the memory of her father, Prince Roland Bonaparte, himself a patron of scientific endeavor.

Prof. Calmette believes that in order to preserve in an alien and civilized region the animals that are an essential requirement of nearly every task of medical research, their living conditions should approximate as closely as possible their natural habitat. He has made a careful study of simian needs and peanuts and bananas, circuses and zoos notwithstanding, are not the only things they should have to eat in his estimation.

Two big blacks from central Africa where the Pasteur monkeys were collected, act as cook and valet de chambre. One burly African in the model kitchen at one end of the glass enclosed building prepares menus as well balanced as any self-respecting chimpanzee would steal for himself in the depths of the Kongo.

Each ape has a roomy chamber enclosed completely with glass or screen, as the weather requires, except for a small window in front. Radiators located midway up the wall keep the atmosphere at suitable temperatures, while an elaborate ventilating system, running water and a system of perches and swings that would do credit to any playground help to make urban home life an attractive substitute for a precarious struggle for existence in central African wilds.

Right now the occupants of the monkey house are contributing their bit to the Pasteur Institute's attack on cancer. From time to time the glass walled dwelling in the grounds

on the Rue Dutot will serve as a source of supply for work on other diseases but for the present the experimental side of tuberculosis work is being concentrated at Kindia.

What further developments in immunity to the dreaded plague of civilization will arise from work in the jungle laboratory only time can tell. Whether practical vaccination of adults to prevent the onset of the white plague is possible or not lies on the knees of the gods, or more practically, in the test tubes of the research men. Tuberculosis authorities in this country are inclined to be skeptical. It seems to be the general consensus of medical opinion here that the introduction of living tuberculosis germs, no matter how weakened, into the system is fraught with danger because experience has shown that any strain of tuberculosis bacilli may become virulent. Much more conclusive experiments with animals, it is felt, will be necessary before American babies should be allowed to be inoculated with a vaccine of this type.

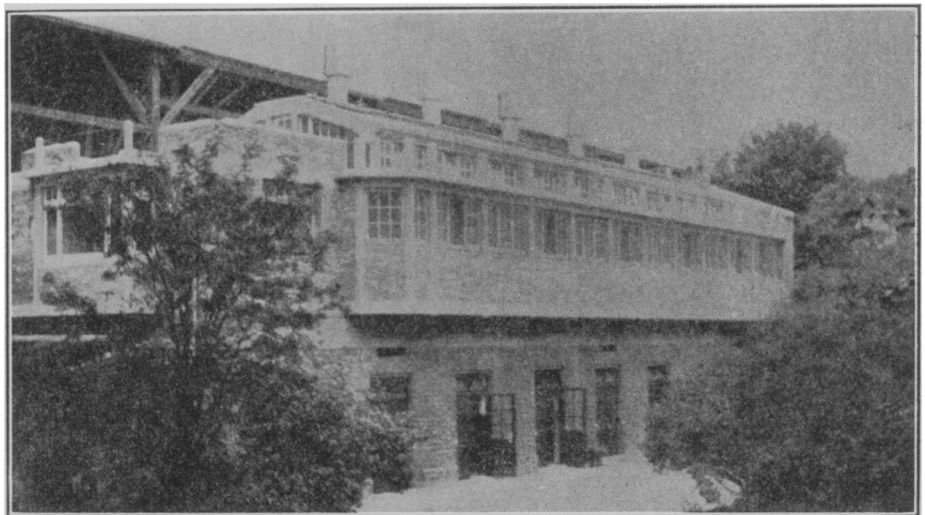
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Portable time pieces have been used for 400 years.

The Monarch butterfly migrates all the way from Florida to the Arctic zone.

Animals that live on vegetation fatten during the summer in preparation for cold weather, when plant food will be scarce.

A white elephant formed part of the retinue attached to the "Temple of the Tooth" at Anarajapoor, in Ceylon, about 500 B. C.



THE MODEL MONKEY HOUSE built to enable the "chimps" to survive infection from the diseases of civilization. The apartment of their caretakers is at the far end.