this is compensated for by a system of counterweights. So delicately will the giant structure be poised that engineers estimate only four electromotors of 75 horsepower each will be required to raise and lower the elevator.

Germany's problem of bringing Berlin closer to the Baltic Sea—or what amounts to the same thing, allow larger vessels to sail right into Berlin—utilizes the navigation of the Oder River to Niederfinow and a ship canal from there to Berlin. This is the famous Hohenzollern Kanal which, near Eberswalde, passes over a railroad instead of beneath a railroad bridge as is the normal practice.

Science News Letter, November 3, 1934

MEDICINE

First Anti-Influenza Serum Is Produced in Horse

British Scientists Who Last Year Isolated Virus Of Influenza Announce Mice Can Also Be Used

AN anti-influenza serum has been produced in a horse by the three British scientists who last year isolated the influenza virus. The same scientists have found a way of systematically using mice, the most widely available of all animals used in medical research, for their intensive experiments in the long-continued war against flu.

This dual announcement is made (*The Lancet, Oct.* 20) by Drs. C. H. Andrewes, P. P. Laidlaw and Wilson Smith, all of whom are working at the National Institute for Medical Research Farm Laboratories, at Mill Hill, a suburb of London.

Dr. Laidlaw was last November awarded the Royal Medal of the famous Royal Society of London for his part in discovering a vaccine for protecting dogs from distemper, which is believed to be the canine counterpart of flu.

The isolation of the influenza virus reported by these physicians last year, since confirmed in America by Dr. R. Shope of the Rockefeller Institute at Princeton, N. J., resulted from their having previously discovered that ferrets are susceptible to infection with human influenza.

Only Animal

The extreme importance of this discovery was due to ferrets being the first animals in which systematic infection with human influenza was shown to be possible. Before last year it had seemed to many scientists that the only way to tackle the flu problem thoroughly was to call for human volunteers, who, living for the time as laboratory animals, would allow themselves to be deliberately infected with the disease so that its cause, cure, and prevention might be intensively studied, and who might, of course, die. Earlier experiments with apes and monkeys had occasionally given hope that these animals might be used for this purpose, but further trials had proved that results were negative more often than not, and that certainly no dependability of response to infection could be expected.

Rapid progress has followed the use of ferrets. What is at present its zenith is referred to in the *Lancet* report quite briefly only:

Five Mice

Drs. Andrewes, Laidlaw and Wilson Smith state that five mice given mixtures of virus and undiluted serum—the serum from a horse which had been hyperimmunized with tissue from ferrets that had been infected with a strain of human influenza—survived, while five controls (which, of course, did not receive the serum) all died.

Last year's discovery enabling ferrets to be infected with flu was an essential step in the obtaining of the serum from a horse.

Details concerning this horse serum will, the doctors add, be published later. For the moment medical men and laymen alike have to wait as patiently as possible for the promised full account of what may prove to be one of the most important medical advances for many years.

Meanwhile it must not be forgotten that these three scientists have made another discovery of the first importance. They have learned a method—probably the only method—by which mice can be infected, with more or less

complete regularity, with the virus of human influenza. The method consists of inoculating the virus directly into the respiratory tract, preferably into the nostrils under light anaesthesia. It was because this method had not previously been systematically tried that earlier experiments with mice suggested that they were not susceptible to influenza.

The three authors of the *Lancet* report state with characteristic modesty that they have published it chiefly so as to give other workers the opportunity to use mice for the study of influenza during the coming winter. It is certain that this opportunity will be widely and quickly utilized, for the mouse is one of the cheapest and most easy to handle of laboratory animals, and is, of course, far more common and also less physically delicate than the ferret.

A certain number of ferrets may, however, be necessary to the pursuit of these researches, at least at present, for the occurrence of a flu epidemic is needed before the British or other scientists can tell whether mice can be infected with virus directly from the throat washings of man. Drs. Andrewes, Laidlaw and Wilson Smith have used as the infecting agent a virus which, though of human origin, has been repeatedly passed through ferrets.

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OCEANOGRAPHY

Gulf Stream Really Does Not Originate in Gulf of Mexico

THE Gulf Stream does not originate in the Gulf of Mexico, two years of research by the Bingham Oceanographic Laboratory of Yale University have determined. Prof. Albert E. Parr, scientific director of the Yale oceanographic expeditions, in charge of this work, now believes that the name "Gulf Stream" is a misnomer and should be changed.

The first known oceanographic survey of the Gulf of Mexico was made in the winter of 1932 by the Yale oceanographic expedition on the "Mabel Taylor," with the cooperation of Drayton Cochran, Yale '32, of New York City. The many observations made during this survey have subsequently been analyzed in the Bingham Laboratory at Yale. According to Prof. Parr, the work has progressed far enough to make it possible to say that the upper layers in the Gulf of Mexico are made of waters quite different from that of the upper layers of the Caribbean and also of the Gulf Stream.

Gulf of Mexico water seems to enter into relatively very little exchange with the waters of the surrounding seas and generally contributes little or nothing to the waters of the Gulf Stream, Prof. Parr and his co-workers have found.

"The observations made," declares Prof. Parr, "provide evidence to prove the theory already advanced by Danish investigators that the so-called Gulf Stream simply takes the shortest possible route from the Yucatan Channel to the Straits of Florida along the north coast of Cuba, carrying chiefly or exclusively waters brought directly from the Caribbean, with little or no contribution at all from the Gulf of Mexico.

"The popular name of the Gulf Stream is therefore certainly a misnomer, and should be replaced by a more suitable designation such as, for instance, the term 'Florida Current' which is now gaining wider usage among oceanographers and nautical people. Perhaps 'Caribbean Current' would really be the most fitting designation," Prof. Parr added.

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CHEMISTRY

Vitamin Structure Secrets Probed With Ultraviolet

VITAMIN B_1, one of the earliest members of the now famous family of vitamins, and also one of the most mysterious, is beginning to yield its secrets. Dr. Francis F. Heyroth and Prof. John R. Loofbourow, of the Basic Science Research Laboratory, University of Cincinnati, investigating crystals of vitamin B with ultraviolet light, have found that they are built on the type of a substance known as pyrimidine, which contains a group of atoms made up of four carbons and two nitrogens in a ring. (*Nature*, Sept. 22.).

The eventual discovery of the structure of the vitamin is important because it may lead to its preparation synthetically. A deficiency of vitamin B_1 in the diet of man leads to the disease known as beri-beri.

The difficulty in determining the chemical structure of the vitamins lies in the fact that the preparations have very great potency and the scientists can not easily tell whether the activity of the substance isolated is not due to some small content of an associated substance. Several samples of material used by Dr. Heyroth and Prof. Loofbourow came from Dr. Atherton Seidell of the U. S. Public Health Service's National Institute of Health.

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