to mathematics covers almost the whole range of the subject, from arithmetic to the elements of the calculus, required of our engineering students, there is nowhere any reference to students of engineering or to any other special class of students. I might, therefore, appear out of order in speaking of this report at the present occasion. But I wish to say most emphatically that, in my opinion, there is no special "mathematics for engineers"; nor is there any method of teaching mathematics, specially adapted to engineering students. If it is wrong to present mathematics in a form so abstract as to make it unintelligible to the student, it is just as wrong to present the results of mathematics in a form so concrete as to reduce the science to a mere art of performing certain mechanical operations, to make it, as the saying goes, a mere tool, and not a habit of thinking.

In conclusion allow me to say that I should be the last to advocate a remodeling of our institutions of learning on the German plan, or the French plan, or any other existing plan. But I believe that the time has come in this country when one or two years of general college study can be demanded as preparation for the professional engineering course, at least for those more able students who wish to obtain a thoroughly scientific preparation for their professional career. An opportunity should then be offered to students of engineering of scientific ability to extend their knowledge on the theoretical side.

ALEXANDER ZIWET
UNIVERSITY OF MICHIGAN

THE BRITISH BUREAU OF SLEEPING SICKNESS

THE British Colonial Office has issued the following statement:

At the instance of the late secretary of state for the colonies and with the cooperation of the government of the Sudan and the Royal Society, his majesty's government have decided to establish in London a bureau for the collection and general distribution of information with regard to sleeping sickness. The Royal Society will find accommodation for the bureau at Burlington House, and one fourth of the cost of up-keep will be borne by the Sudan government.

The bureau will be under the general control and direction of an honorary committee of management, appointed by and responsible to the secretary of state for the colonies. The committee will be composed of the following: Chairman, the Right Honorable Sir J. West-Ridgeway, G.C.B., who is also chairman of the advisory committee of the tropical diseases research fund; Sir Patrick Manson, M.D., K.C.M.G., F.R.S.; Sir Rubert Boyce, F.R.S.; Dr. Rose Bradford, F.R.S. (representing the Royal Society); Colonel D. Bruce, C.B., F.R.S.; Mr. E. A. Walrond Clarke (representing the foreign office); Mr. H. J. Read, C.M.G. (representing the colonial office), with Mr. R. Popham Lobb, of the colonial office, as secretary.

The main function of the bureau, which will be administered by a paid director, will be to collect from all sources information regarding sleeping sickness, to collate, condense, and, where necessary, translate this information, and to distribute it as widely and quickly as possible among those who are engaged in combating the disease. The publications of the bureau will be divided into two categories, viz., scientific publications intended for those who are engaged in research work or in carrying out medical administration in the infected districts, and publications of a less technical character for the use of government officials, missionaries and others, whose duties involve residence in those districts. One important piece of work will be the preparation of a map of the whole of tropical Africa, showing the distribution of the disease and of the different species of blood-sucking insects which are suspected of conveying it. A map of this kind showing, as it would, the extent to which the distribution of the disease coincides with the distribution of the different

species of insects, is expected to supply valuable information to scientific investigators and to give guidance to the different administrations, by indicating the lines of advance of the disease and the districts which require special protective measures. The duties of the director of the bureau will for the present be undertaken by Dr. A. G. Bagshawe, of the Uganda Medical Staff.

BEAUPERTHUY ON MOSQUITO-BORN DISEASES

Dr. Agramonte, in an article quoted from the Havana *Cronica Medico* by the *British Medical Journal,* calls attention to the pioneer work of Louis Daniel Beauperthuy, born in Guadeloupe in 1808. Writing in the *Gaceta Oficial de Cumanà* in May, 1853, Beauperthuy says:

To the work I undertook (health officer in a yellow fever epidemic in Cumanà) I brought the knowledge gained during fourteen years' microscopic observation of the blood and secretions in every type of fever. These observations were of great service to me in recognizing the cause of yellow fever and the fitting methods of combating this terrible malady. With regard to my investigations on the etiology of yellow fever I must abstain for the present from making them public. They form part of a prolonged study, the results of which are facts so novel and so far removed from all hitherto accepted doctrines that I ought not to publish them without adducing fuller evidence in support. Moreover, I am sending to the Académie de Paris a communication which contains a summary of the observations I have made up to the present, the object of which is to secure the priority of my discoveries concerning the cause of fevers in general. . . .

The affection known as yellow fever or black vomit is due to the same cause as that producing intermittent fever.

Yellow fever is in no way to be regarded as a contagious disease.

The disease develops itself . . . under conditions which favor the development of mosquitos.

The mosquito plunges its proboscis into the skin . . . and introduces a poison which has properties akin to that of snake venom. It softens the red blood corpuscles, causes their rupture . . . and facilitates the mixing of the coloring matter with the serum.

The agents of this yellow fever infection are of a considerable number of species, not all being of equally lethal character. *The zancudo bobo,* with legs striped with white, may be regarded as more or less the house-haunting kind. . . .

Remittent, intermittent and pernicious fevers, just like yellow fever, have as their cause an animal, or vegeto-animal virus, the introduction of which into the human body is brought about by inoculation.

Intermittent fevers are grave in proportion to the prevalence of mosquitos, and disappear or lose much of their severity in places which, by reason of their elevation, have few of these insects.

The expression "winged snakes" employed by Herodotus is peculiarly applicable to the mosquito and the result of its bite on the human organism.

Marshes do not communicate to the atmosphere anything more than humidity, and the small amount of hydrogen they give off does not cause in man the slightest indisposition in equatorial and intertropical regions renowned for their unhealthiness. Nor is it the putrescence of the water that makes it unhealthy, but the presence of mosquitos.

It was to the *Gaceta Oficial de Cumanà* that Beauperthuy seems to have written most fully, but he made more than one communication to the Académie des Sciences. One of these, dated from Cumanà, January 18, 1856, is entitled "Researches into the Cause of Asiatic Cholera and into that of Yellow Fever and Marsh Fever," and in this he says that as early as 1839 his investigations in unhealthy localities in South America had convinced him that the so-called marsh fevers were due to a vegeto-animal virus inoculated into man by mosquitos.

SCIENTIFIC NOTES AND NEWS

Oxford University has conferred its doctorate of science on Dr. F. Raymond, of the Hôpital de la Salpêtrière, professor in the University of Paris; J. J. Harris Teall, M.A., F.R.S., director of H.M. Geological Survey; and James Ward, ScD., fellow of Trinity and professor of mental philosophy in Cambridge University.

Dr. Birkeland, professor of physics at Christiana, has been given the honorary