

Instruction will be given in pathology of colonial diseases, colonial hygiene, protozoology, bacteriology and serology.

THE Observatory at Lake Angelus, near Pontiac, known as the McMath-Hulbert Observatory, has been presented to the University of Michigan. It is equipped with new instruments for making motion pictures of celestial bodies. The gift is made by three amateur astronomers, all honorary curators of the University of Michigan Observatories. They are Mr. Francis C. McMath, consulting engineer; his son, Mr. Robert H. McMath, president of the Motors Metal Company, Detroit, and Mr. Henry S. Hulbert, senior judge of probate in Detroit.

AT a meeting of the president and fellows of Harvard College on January 11 it was voted to establish the Botanical Garden in Soledad, Cuba, as a branch of the Arnold Arboretum, to be called the Atkins Institution of the Arnold Arboretum.

THE herbarium of Mr. Charles C. Deam, recently acquired by the Indiana State University, contains over 60,000 specimens, on which he has based his books on the trees, the shrubs and the grasses of Indiana.

A MEETING of horticulturists was recently held at the headquarters of the Royal Horticultural Society, London, to discuss the establishment of a central research station as an aid to securing the fullest benefits

of the tariff on imported horticultural products. Mr. H. A. Tipping, who presided, said the time was opportune, because of the "Buy British" movement, to establish such a station. If the matter were left to the government it would take a long time to get anything done, and it would be still longer before any results were obtained. There were well-equipped laboratories at Wisley which would make a very good beginning for such a project. Mr. J. W. Barr, who organized the meeting, explained how a central research station would be of value to the horticultural industry in dealing with problems which required research in the laboratory or in private culture, and in securing better and more economical methods of production. He pointed out that according to official figures the annual importation of bulbs alone exceeded £1,000,000 in value. With a few exceptions these could be produced in England, if the growers possessed more knowledge of culture and propagation. Sir William Lawrence suggested that the quickest way to achieve the desired result would be to get instructors from Holland and elsewhere to teach the growing and harvesting of bulbs and early vegetable crops. A resolution was carried recording that in the opinion of the meeting a central research station should be established and requesting Mr. Barr to approach the trade organizations with regard to the setting up of a working committee.

DISCUSSION

DISCOVERY AND DISCOVERERS

IN his spirited appreciation of Schaudinn, the discoverer of *spirochaeta pallida*, Professor John H. Stokes¹ makes a serious historical omission when he states that Metchnikoff with Roux "had accomplished the first successful transfer of syphilis to apes" in 1905, for this was done already in 1875 and 1877 by Edwin Klebs. His publications² on the subject can amply confirm this. The fact is generally accepted, at least by those who are not overawed by the clamors of certain "microbe hunters" who date all advance in etiologic research from Koch, relegating to the antiquarian rubbish heap what came before from the brains and hands of Pasteur, Lister, Klebs and others. Metchnikoff himself was one of those, for he told me some years ago that he had not the slightest doubt that Klebs was the first to have seen the

spirochaeta and the first to have successfully inoculated apes with syphilis.

On reading carefully the two reports which antedate by nearly thirty years Schaudinn's discovery, one comes to realize at once why Klebs held in those years the undisputed leadership in an entirely new field of research. He possessed to a far greater degree than his contemporaries and coworkers in the same field (notably Pasteur, Lister and Koch) an unrivaled experience in pathological morphology, a very keen eye for microscopic analysis combined with a versatile technical talent. Stokes is amazed by Schaudinn's "astounding eyesight," which allowed him to dispense with a satisfactory dark-field equipment, substage condenser, etc. Klebs' equipment was still simpler, and again simpler was that of a Leeuwenhoeck, of a Bichat, who all made brilliant contributions to our knowledge of microscopic life—so brilliant indeed that one sometimes wonders whether we are not getting spoiled by too much and too refined an equipment.

The report under consideration states: (1) that in syphilitic lesions there are regularly found spirillar organisms, slender motile rods 2 to 5 microns long, which seem to belong in Ehrenberg's botanical group

¹ SCIENCE, 74: 502-6.

² Edwin Klebs, "Ueber Syphilisimpfung bei Thieren und über die Natur des syphilitischen Contagiums" (Vortrag 51. Versamml. Deutsch. Naturf. u. Aerzte, Cassel), *Prag. med. Wochenschr.*, 3: 409, 1878; "Das Contagium der Syphilis; eine experimentelle Studie," *Arch. f. exper. Pathol. u. Pharmacol.*, 10, 161 (4 plates), 1879, Nachtrag: F. J. Pick: Mittheilung üb. d. z. Impfung verwendet. Fälle.

of monads, and which Klebs names, because of their spirillar shape, "*helico-monads*"; (2) cultures of these organisms are obtained on a special medium of isinglass jelly; (3) successful transfer of syphilis to animals was obtained only in apes (*macacus*), very suggestive but not entirely conclusive results in the case of subcutaneous inoculation of culture material (July 8, 1875), entirely conclusive in the case of inoculation with freshly excised material from a human primary lesion (December 29, 1877). At this distance we have of course no means to control the exactness of all these findings. They are certainly impressive in view of the similar later findings. From what Professor Ghon told me some years ago, the pathological institute in Prag still has the skull of the second ape with the very characteristic lesions.

If attention is called here to these overlooked facts, it is not done with the intention of making a claim for priority or for historical justice. It is unnecessary, for good work can stand on its own feet, and anyway, as Bertrand Russell might say, its neglect by others has no "cosmic importance" whatever. But it is of human interest, if not of importance, to note from these diggings in the past the two historical phases in etiologial research. Leaving the broader, pathological consideration of the rôle of micro-organisms in animal economy, research assumed the form of a vast enterprise with the elaboration of a highly specialized methodology which focuses attention exclusively, or almost so, on the microbe or virus, forgetting, or at any rate neglecting the fact that there is a human structure, a whole man, "himself a biological problem of no mean order," as Stokes well remarks. That the fruitfulness of an original idea is extinguished by the weight of subsequent methodological refinements is nothing new in history. The impressive edifice of medieval scholasticism erected upon Aristotelian and Platonic ideas is the gigantic monument to these vicissitudes of human thought. And do we not sometimes detect in the experimental subtilizations of modern research a resemblance to the scholastic method of syllogistic hair-splitting?

Results of course ought to tell. For the case under consideration Stokes notes regretfully that Schaudinn's discovery "has never yet been carried to its logical outcome for practical medicine," and that even the chemo-therapy which it directly incited "was, in a sense, a premature blooming." But one marked effect it did exert. It called forth a very rapid acceptance by the profession which was expressed, Stokes says, in the appearance of 750 articles in about one year. In view of the negative practical results was there really a compensating theoretical gain in such literary overproduction? One has reason to doubt it when one sees how the bulk of the literature is swelled

by purely classificatory and methodological reports which effectively screen a hustling world of workers from a view of the things that really matter. If we have made so little advance in the twenty-five years after Schaudinn's discovery, so that we do not know any more about syphilis than Klebs knew fifty-five years ago, it seems high time that we ask ourselves whether both theory and method are not defective somewhere. Luckily this question is being asked ever more audibly.

Another more general question is asked by Stokes as to the relative value in modern investigation of "genius" or the man of "persistent singleness of purpose" by which he means the strictly limited, specialistic worker. He declares himself for the latter, being dubious about "genius," though he thinks he "may still perhaps scatter over the whole field of a science a series of germinal or epochal discoveries." Hence he is not quite ready to agree with the Soviet delegates who last spring, at the History of Science Congress in London, pleaded with no mean dialectic ability for a history which was not "biographical apotheosis or apologetic biography. . . . Only when science itself is understood to be a function of society can there be given a scientific history of knowledge. Only because knowledge is an integral part of social life, is the history of knowledge an integral part of history."³ Our current histories, our current speech, it must be admitted, utter the word "genius" too frequently and too loosely. It may easily be argued that in science there only once was a genius and that his name was Aristotle, for not only his fame but his contribution to thought have endured two thousand five hundred years, and it still influences us in every phase of scientific activity. "Genius" derives from sexual propagation, but the goodness of its productions can not be measured by the tons of lifeless paper—it has only a living measure in time. Indeed "art is long and life is short."

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A NEW AUTOTROPHIC BACTERIUM WHICH OXIDIZES AMMONIA DIRECTLY TO NITRATE AND DECOMPOSES PETROLEUM

IN connection with the studies of the senior author¹ on living microorganisms in ancient rocks an attempt was made to determine whether or not other old materials than rocks harbor living microorganisms. Among

³ N. Bukharin: In symposium on "The Sciences as an Integral Part of General Historical Study," June 30, 1931 (mimeographic report). The subject is also discussed in the same manner in SCIENCE (p. 497, Nov. 20, 1931) in the interesting and valuable address of Professor Cecil H. Desch.

¹ Jour. Bact., 22: 3, 183, September, 1931.