NOTES

ON

SOME GERMAN UNIVERSITIES.

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II.—THE UNIVERSITY OF BERLIN.

The University Buildings.—The Hospitals.—Libraries.—The Hygienic Institute; its Laboratories.—Professor Koch, Drs. C. Fränkel, and R. Pfeiffer.—Microphotography.

THE Royal Friedrich-Wilhelm's University was opened in 1809; the building, which is situated at the east end of Unter den Linden, was formerly the palace of Prince Henry, brother of Frederick II, and was built in 1754. It can now accommodate 5,000 students. Space will not permit a detailed description of the building beyond mentioning that it contains numerous lecture theatres, a zoological museum, especially notable for its collection of birds, and a mineralogical museum, which, after the British Museum, is stated to be the most complete in Europe.

The hospitals of Berlin are numerous, and may be divided into two sets: those where lectures are given, that is, the clinics or medical schools; and those where there is no regular teaching. Of the former, the most important is the Charité, which comprises clinics of medicine, surgery, nervous diseases, midwifery and gynaecology, children's diseases, syphilis, skin, eye, etc. In addition to the Charité are the University Surgical Clinic, the Royal University Clinic for Women, the University Medical Policlinic (out-patients), and the University Policlinic for Throat and Ear. The most important of the other hospitals are Friedrichshain (620 beds), Moabit (900 beds), Dalldorf Asylum (1,200 beds), and Augusta (190 beds). There are also libraries from which students can take out books, on obtaining a card from the University. The principal one, the "Königliches Bibliothek," is situated opposite the University building. The whole of this is open daily, with the exception of Sundays and public holidays, from 9 to 3, the large reading room attached to it being open from 9 to 7.

In the same neighbourhood is the journal room where all foreign periodicals of note are taken in. In addition to these there is the Königl. Universitäts Bibliothek, in the Dorotheenstrasse, which has a reading-room attached. From this library books can be taken home and kept for a month. In the same street is the Bibliothek der Medicinischen Gesellschaft. This belongs to members of the Medical Society, and is, therefore, comparatively private. There is also a library of hygienic literature, and in the Friedrichstrasse is one for the use of military surgeons.

It will be convenient to begin the description of the organisation of the medical faculty in Berlin with the Institute of Hygiene. This building is situated in the Klosterstrasse; the Hygienic Laboratory, which was opened in 1885, is housed in the building which was formerly the academy for civil engineers, and occupies the first and second floors, with the exception of some rooms in which animals are kept for experimental purposes. The laboratories consist of two distinct parts, those for chemistry and those for bacteriology. On the first floor to the right of the staircase is the lecture theatre, with 119 seats. It is provided with a digestorium, and various arrangements for the suspension of diagrams and plates. In connection with it is a preparation room for the lectures, and behind this three rooms with collections of apparatus, charts, and instruments for lecture purposes.

The chemical department, which is also on the first floor, consists of the private laboratory of Dr. Proskauer, one of the assistants; behind this is a dark room for the optical and spectroscopical examination of substances for analysis. Then follows the larger chemical laboratory, with places for twenty-five workers, in which are carried on the examinations of air, soil, water, and various articles of diet. Each worker's place is provided with a water-jet aspiration apparatus, consisting of a combination of tubes dilating or compressing air by the aspirating power of a water jet. On the walls are sterilising and digestive chambers; under these apparatus is a large water bath with several openings, in which vessels containing the substances to be analysed are kept at a temperature of 100° C. The steam from this passing through a cooling medium is condensed, and supplies the distilled water for general use. Under the water cistern is a drying chamber. For heating to higher temperatures a sand bath is used, which also contains a drying chamber.

On the first floor is also the library of the institute.

On the second floor is the bacteriological department, with two rooms which form the director's private laboratory. In the same section are the rooms of Dr. C. Fränkel, the first assistant, together with his laboratory, and also the large laboratory corresponding to that for chemistry beneath. In the large bacteriological laboratory, which can accommodate fourteen workers, the important work is done, and from time to time courses of instruction are given in it. In a cross building are four smaller laboratories, in which other investigations are carried on. Adjoining these is the laboratory for students. Another building forms a courtyard, which contains a small auditorium.

The fittings are much the same in the various laboratories. They consist of microscope tables, which are placed in the windows, each serving for two workers. In the middle of the room stand tables on which is placed the requisite apparatus for bacteriological work, as for cooking, making of nutrient gelatine, cultivations, etc. Sterilising apparatus, incubators, drying chambers of various construction, together with digestors, steam sterilising apparatus, and incubators for the cultivation of micro-organisms, are also provided. There is also an apparatus, which is provided with a gas flame day and night, for the constant maintenance of a given temperature within one or two degrees. An ingenious arrangement of metal springs, which naturally expand with heat, is attached to the gas burner, so that if by any accident the flame should go out, within a few seconds the springs contract, and by this mechanism the gas cock is turned off, and all escape prevented.

In connection with the bacteriological department is a photographic studio, in which the photographic appearances of various cultures, with their characteristic development, are preserved.

Medical men are admitted to the practice courses as well as to the other important work as far as space allows. The chemical and bacteriological departments go hand in hand, and the greater part of the work done—as, for instance, the examination of drinking water—is carried on in both departments at the same time. The laboratory is open on weekdays from 9 to 5, and on Saturdays from 9 to 2.

The arrangements for work in these laboratories are as follows: (1.) A daily four hours' course, which lasts a month. (2.) A place for work during a whole term. The fee for the course is 65½ marks (£3 5s.), and for the use of a place in the laboratory 115½ marks (£5 15s.). Workers have to provide all their reagents and small pieces for manipulation, but are provided with the main collection of bottles and glasses upon paying a deposit, which is returned, with deductions for breakages, at the end of the course.

Professor Robert Koch, the Director of the Institute, was born in 1843, and from 1872 to 1880 was a coroner at Wallstein in Bamst. There he commenced his bacteriological investigations, which were published in Ferdinand Cohn's biological memoirs. These were shortly followed by his paper on the Investigation of the Etiology of Wound Infections. In 1880 he was called to Berlin as a member of the Royal Hygienic Department. The following papers appeared in the first volume of the *Mittheilungen*: Investigation of Pathogenic Micro-organisms; The Etiology of Anthrax; On Disinfection; Investigation on Disinfection by Means of Hot Air (in conjunction with Wolffhügel); The Convenience of Steam for Disinfecting Purposes (in conjunction with Gaffky and Löffler). In the second volume appeared: The Etiology of Tuberculosis; Experimental Study on the Artificial Attenuation of the Anthrax Bacillus by Cultivation (in conjunction with Gaffky and Löffler). In 1883 Koch was sent as principal of the German Cholera Commission to Egypt and India, when he discovered the comma bacillus. Besides these important works he has published many papers in the various medical journals. In 1882 he startled the scientific world by the literally "epoch-making" discovery of the bacillus of tubercle. In 1885 he was made Professor and Director of the Hygienic Laboratory and Museum in Berlin, where he has continued his investigations ever since. He is a man of few words and of quiet retiring manners, and in addition to his great ability as a scientific investigator, he shows much mechanical ingenuity in the invention of apparatus for bacteriological research.

A considerable proportion of the work done in the hygienic laboratory proceeds from the assistants. The chief of these, Dr. C. Fränkel¹ is the author of a complete textbook of bacteriology

¹ Since this account was written, this gentleman has been appointed Professor at Königsberg.

ZEISS'S MICROPHOTOGRAPHIC APPARATUS.

(*Grundriss der Bakterienkunde*) and of numerous special treatises on the various branches of that science. More recently, much has been done by Dr. R. Pfeiffer on the micro-photography of micro-organisms. This gentleman, in conjunction with Dr. Fränkel, is bringing out a very complete atlas of photography of micro-organisms, several parts of which have already appeared. Some of the special points in the structure of the micro-photographic apparatus of Drs. Fränkel and Pfeiffer are that the microscope can lie in a horizontal position, and the camera with the plate is placed not over, but behind the microscope, and so is placed on a second support in the horizontal prolongation of the same.

Placed in front of the microscope, and in the same plane, is a contrivance to regulate the amount of light for the object, and act as a substitute for the mirror, which in the prone position of the instrument is not applicable. The three most important parts of the micro-photographic apparatus, namely, the illumination contrivance, the microscope with its appurtenances, and the camera are all arranged in one plane, and are all in immediate connection and placed in a most convenient manner. Various kinds of artificial light, such as limelight, lamps, magnesium, etc., are employed, but for very high powers and stained preparations sunlight is far superior.

THE MANDRAKE.¹

By WILLIAM WYNN WESTCOTT, M.B.LOND.

THE true mandrake plant, *Mandragora officinalis* or *Atropa mandragora*, was used to prepare a medicine by many of the peoples of the ancient world; notably by the various races dwelling in Asia Minor, by the Greeks and Egyptians. In mediæval times the nations of Europe recognised its medicinal properties. The plant is indigenous to Palestine and Syria, and is occasionally found in Eastern Turkey and Asia Minor.

The root represented in the accompanying drawing is several years old, and is quite dry. It exhibits very well the curious resemblance to the human form, which has made a further interest in the plant, and which gave rise in remote ages to the assertions of magical power and virtues in sorcery. The ancients laid much stress on the doctrine of correspondences, and they argued that this human-like root must have special attributes as regards man, and hence this root became used as an amulet or talisman, and ladies valued it as a love philtre.

The Hebrew name is *dudaim*, or "love fruit," and the reference to Genesis, cap. xxx, where Reuben, the son of Leah, finds man-

drakes in a field at the time of harvest (April) is known to all. Rachel consents to resign Jacob in exchange for the mandrakes, and Leah said to Jacob: "I have hired thee with my son's mandrakes." The birth of Issachar follows, a name which means in Hebrew hire or wages.

This root comes from Damascus, and is a very striking example of how much the plant may represent a man's form. Of course, all roots are not like this one, but there is a curious tendency to send off two lateral branches above and to end in two limbs below. There are often, also, the constrictions suggesting the neck and waist. The root of the white bryony of England, a cucurbitaceous plant, is sometimes fudged up by dealers to imitate the mandrake root; but I guarantee the genuineness of this sample, which is not carved out, but when green it may have been pressed a little into shape before being allowed to dry.

From a specimen lent by Mr. Martindale.

The plant belongs to Solanaceæ, and is a near connection of the potato; the root is perennial; there is no stem; from the crown springs a cluster of radical leaves which are entire, wavy, ovate; among them there springs up a flower-stalk, or several, each with one bell-shaped five-lobed corolla. The fruit is a berry, nutmeg-sized and of orange colour. The flowers are mostly white, and have a full scent, but there are varieties with dusky flowers and unpleasant smell.

¹ Read at a meeting of the North London District of the Metropolitan Counties Branch.