NOTES ON SOME GERMAN UNIVERSITIES.

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II.—THE UNIVERSITY OF BERLIN.

(Continued.)

The Physiological Institute.—Professor du Bois Reymond.

THE Physiological Institute, a red-brick building situated at the corner of the Neuen Wilhelmstrasse and the Dorotheenstrasse, contains four departments: (1) Microscopic and Biological, under Professor Fritsch; (2) Chemical, under Professor Kossel; (3) Special Physiological, under Professor Gad; (4) Physical and Physiological, under the director, Professor du Bois Reymond. The building contains two lecture theatres, one seating 250 persons which is used by the director, and one with accommodation for 65 students which is used by his assistants. On the ground floor are the director's private workroom and laboratory, and the physical department with a laboratory for six workers and a private workroom; there is a special instrument room for physico-physiological apparatus. On the first floor is the microscopical department with twenty places, a large aquarium for sea animals, a microscopical gallery, and an injection room, together with the zoological and comparative anatomy collections. On this floor there is also a special photographic department under the direction of Professor Fritsch. On the same floor is the chemical department under Professor Kossel, with a laboratory fitted for thirty workers, which every summer term is used by seventy or eighty students; moreover, a weighing room and a spectroscopic room. The vivisection department, with six places, is on the ground floor, and is provided with a demonstrator's table and a gallery. The animals are kept in the cellars. In the summer the frogs are kept in a large basin in the garden. In the cellars are also two bacteriological chambers, together with heating apparatus. The lectures and courses are very numerous. Professor du Bois Reymond lectures twice a week in summer on the first part of physiology, and in winter on the second part of physiology, with experiments four days a week. Professor Fritsch teaches histology, comparative anatomy and microscopic work, Professor Kossel, medical chemistry with experiments, and Professor Gad gives special courses on respiration, speech, and experimental work. Several special courses are also held by the other assistants.

Professor du Bois Reymond was born in Berlin in 1818, and was a pupil and assistant of Johannes Müller. In 1843 he published his work *On the So-called Frog's Current and the Electrical Fishes*, with a dissertation entitled, "*Quæ apud veteres de piscibus electricis extant argumenta*." In 1858 he succeeded Müller in the Chair of Physiology. In 1848 appeared the first volume of his chief work, *Experiments on Animal Electricity*. A number of further essays on electro-physiology followed. As Secretary to the Academy of Science, since 1867, he has had to deliver a number of lectures which have been recently published by Seit and Co., of Leipzig. From 1859 to 1877 he edited the *Archives of Anatomy and Physiology*, in conjunction with Reichart. Since 1877 he has been sole editor of the *Archives of Physiology*. In spite of his age, du Bois Reymond is still a most energetic worker, and in addition to his distinction as a physiologist, he is a leader of philosophical thought in Germany. As a representative of natural science, du Bois Reymond is considered to base his philosophical theories upon definite knowledge; in reality, however, they appear to rest on an absence of definite knowledge, that is on agnosticism. "Ignoramus" is his invariable answer to all fundamental problems, and he often carries this profession of present ignorance still further by adding "Ignorabimus." Since his famous paper at the Naturforscherversammlung of 1872, he has employed himself in marking out the boundaries of our knowledge in various directions, putting up a *Weltrathsel* whenever, in his opinion, the limit was reached. From one *Weltrathsel* he has advanced within a few years to seven, so that at last, with Hæckel one looks on with concern, wondering where he is going to stop. At the same time it would be interesting to know from what place, within the boundaries, the knowledge comes which has enabled the Professor thus to formulate his "Ignorabimus." A

good feature of du Bois Reymond's system is its usefulness to the practical scientific student. Lange says somewhere, in speaking of modified materialism, that it may serve as a *Maxime der wissenschaftlichen Detailforschung*, words which exactly describe the possibility of usefulness of all philosophical agnosticism. As the physicist would never have got on if he had puzzled his head too much about the metaphysical meanings of force, matter, attraction, etc., so all along the line of scientific inquiry there are certain disturbing elements both under the stars and beyond them which must necessarily be excluded when special progress is to be made.

THE PATHOGENIC MICROBE OF DISTEMPER IN DOGS, AND ITS USE FOR PROTECTIVE INOCULATION.

By EVERETT MILLAIS.

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HOSPITAL.]

DISTEMPER is a disease which attacks the whole dog tribe before maturity, as a rule, and, in my opinion, is due to a bacillus whose identity I believe I have established. Distemper is a specific infectious disease (one attack confers immunity); and as with other zymotic diseases, so here, some animals appear to be naturally immune against it.

After exposure to infection an incubative period of variable duration follows; the symptoms which then appear are dulness, loss of appetite, and fever; the nose at the same time becomes hot and dry, and a husky cough, constipation, or diarrhoea are commonly present. The eyes and nose now discharge freely, the fluid being at first watery but purulent later on. Finally, the animal emaciates rapidly, while the coat becomes hard and staring. In about three weeks, should no complication ensue, the dog begins to regain condition and recovers. Unfortunately, complications generally do supervene, for few cases occur in which bronchitis is not a symptom. Pneumonia carries off a large number of those attacked, whilst jaundice, fits, and diarrhoea account for the death of many others. As sequelæ we find chorea and paralysis.

The mortality is very high, and 90 per cent. has been given as the loss from this disease. It is nevertheless doubtful whether the mortality is really so high, as it is a notorious fact that mongrels are peculiarly exempt from malignant distemper. In well-bred dogs, however, 90 per cent. fairly represents the average of fatal cases.

To give a slight idea of the fatal effects of the disease on highly bred canine stock, I will give but one or two examples, although these might be increased by hundreds.

TABLE I.—*Distemper contracted at Shows.*

Show.	Date.	Owner.	No. Shown.	Deaths.	Ultimate Damage at Home.
Crystal Palace	1887	Mr. A.	2	1	23 deaths.
Barn Elm ...	1888	Mr. A.	2	1	15 deaths.
Brighton ...	1889	Mr. B.	1	1	13 deaths.
"	"	Mr. C.	2	1	Entire kennels attacked.
"	"	Mr. D.	2	2	17 deaths.
Crystal Palace	"	Mr. E.	3	0	6 deaths.
Total ...	—	—	12	6	74 deaths.

Such a table will give a small notion of the frightful annual loss occasioned by exhibiting puppies for the first time at our principal dog shows.

Experiments Undertaken to Discover the Pathogenic Micro-organism.—In the beginning of June, 1889, I inoculated gelatine tubes with the mucus from the nose of a collie suffering from distemper complicated by pneumonia. Four tubes were inoculated, and in three days a growth of a similar character was apparent in each, the growths liquefying the gelatine. Shortly after this Mr. Sewell procured for me a puppy suffering from pneumonic distemper. From this dog further tubes were inoculated with the discharge from the nose, and in a like period similar growths were to be seen as those grown from the collie. This puppy was then destroyed.

A drop of each growth, stained with fuchsin and examined with a Zeiss D, showed three micro-organisms, namely, two bacilli, which I will distinguish as A and B. In addition, micrococci were present in far larger quantities than either of the bacilli. The