

date, there have been reported only 207 cases, of which only 2 have occurred since January 20. And it must be remembered that there are effectual ways of dealing with both diseases—tetanus by the prophylactic administration of antitetanic serum, and gas gangrene by very free incisions.

No, the deadliest enemy is the ubiquitous streptococcus, the foe that kills more than shells and bullets. But as it is certainly killed by undiluted carbolic acid or by a 5 per cent. solution in water, there is at least a chance that, so far as streptococci are concerned, wounds may be disinfected even in war, and if these and the other pyogenic organisms are destroyed, there is, as I have shown, great reason to suppose that sporing anaerobes like *Bacillus tetani* would have no chance of growing.²

But it may be said: "What about the organisms that have entered the lymph channel and the blood current? What is the good of trying to purify the wound if they have already given us the slip?"

Let us see precisely what Dr. Thiele says, and remember that his experiments are conducted by injecting cultivations of micro-organisms subcutaneously. He maintains:—

(1) That they travel quickly to the nearest lymphatic glands, where they are retarded, perhaps killed.

(2) If not, they make their way along the thoracic duct to the jugular vein and enter the blood stream, and by that channel are conveyed, a few at a time, and in sufficient numbers to be detected by the microscope, to the bone marrow, the spleen, and other parts where groups of cells of the phagocyte class are ready to deal with them.

(3) If the enemy overpowers all these means of resistance they may invade the blood in large numbers and cause general blood-poisoning.

(4) That some are quickly taken up by the blood without passing through the lymphatics.

I must again point out that, in spite of all these alarming facts, general septicæmia probably never occurs if the wound heals without suppuration. To take another simile from the war, the germs that escape into the circulation are like enemy aliens, prisoners of war, or the struggling Turks who crossed the Suez Canal. It is not they, but the main body on the fighting line—that is, the wound—who are engaged in manufacturing the deadly toxins. If they can be annihilated, there is not much fear of mischief from the enemy in our midst. It has never been suggested that germs which have entered the circulation from the wound go back with their ill-begotten progeny to make it suppurate. The argument, therefore, that it is useless to try to make wounds aseptic because some germs have already escaped into the circulation is no stronger than that founded on the resisting powers of spores to the action of antiseptics. Both are the arguments of the bacteriologist rather than of the practical surgeon, and, whilst being treated with all respect, they must not be estimated above their true value.

I cannot hope that your patience is not exhausted. But I trust that you are now convinced of the real danger that may result from neglecting Lister's teaching both in civil and military practice.

As to the latter, which for the moment occupies almost all our thoughts, I should be the last to say that there is only one way of salvation—that, for example, corrosive sublimate is dangerous, or iodine untrustworthy, or peroxide of hydrogen of little value.

² In using the word anaerobe I desire to own that I do not completely understand its meaning. It certainly has been used in more than one sense, and to-day bacteriologists are not agreed about the effect of oxygen on anaerobes, their need for it, the sources from which they obtain it, and other points. We cannot divide micro-organisms by a clear cut line into aerobes and anaerobes.

Still less would I say that military and civil surgery should be run on the same lines. But I still think that undiluted carbolic acid is, according to our present lights, the antiseptic most likely to be practically useful in the rough-and-tumble practice of the battlefield.

And whether or not this may turn out to be the conclusion of our gallant brethren at the front, I would add that the experience of the present war is one of the strongest arguments for rallying to Sir James Crichton-Browne's battle-cry, "Back to Lister."

Long ago it was prophesied that science would stop war by making it too horrible. Are we nearing that blessed result? One fact stands out in spite of the faint hopes I have expressed—that nothing can stop sepsis in war except stopping war altogether.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. W. L. Mollison has been elected master of Clare College, in succession to the late Dr. E. Atkinson. He was Second Wrangler in the Mathematical Tripos of 1876, and Second Smith's Prizeman, and was elected a fellow of Clare in that year. Afterwards he became successively junior tutor and senior tutor, and was at one time moderator and examiner in the Mathematical Tripos. He was made an Honorary LL.D. of the University of Aberdeen in 1897.

LONDON.—Mr. L. W. King, assistant keeper of the Egyptian and Assyrian department of the British Museum, has been elected professor of Assyrian and Babylonian archæology at King's College. Mr. King's professorship will be a part-time post, and he will retain his position at the museum.

Dr. F. Wood-Jones, lecturer and head of the department of anatomy at the London (Royal Free Hospital) School of Medicine for Women, has been granted the title of professor of anatomy in the University.

WE learn from *Science* that Robert Flersheim has left a bequest of a million marks to the University of Frankfurt.

THE Rockefeller Foundation has, says *Science*, made comprehensive plans for improving medical and hospital conditions in China. The plans are based on the report of the special commission sent by the foundation to China. To carry out this work the foundation has established a special organisation to be called the China Medical Board of the Rockefeller Foundation, of which Mr. J. D. Rockefeller, jun., is chairman. The plan outlined by the commission provides for the development of medical education in China as the first step. With the view of building up a body of Chinese medical men able to teach medical science, the foundation has decided to establish six fellowships, each of 200*l.* a year and travelling expenses, to enable Chinese graduates to study abroad. Six fellows have been appointed, one of whom is already studying in the United States.

THE new buildings of the Mellon Institute of Industrial Research and School of Specific Industries of the University of Pittsburgh were formally opened on February 26 last. The institute, which cost 75,000*l.*, was the gift of Messrs. A. W. and R. B. Mellon, of Pittsburgh; it is provided with complete facilities for the investigation of manufacturing problems and for conducting industrial research in accordance with the system of co-operation between science and industry, founded by the late director of the institute, Dr. R. K. Duncan. By this system, a manufacturer having a

problem requiring solution may give a fellowship to provide the salary of a researcher selected to carry out the investigation desired, the institute supplying every facility for the work. At present twenty-three fellowships are in operation and forty research chemists are at work. At the opening ceremony fifteen honorary degrees were conferred on distinguished Americans. Though the institute possesses its own endowment and has its own board of trustees, it is an integral part of the University of Pittsburgh.

SOCIETIES AND ACADEMIES.

LONDON.

Zoological Society, March 23.—Mr. R. H. Burne, vice-president, in the chair.—R. Lydekker: The true coracoid. The element in birds and post-Triassic reptiles universally known as the coracoid is the homologue of the human coracoid process, and its equivalent the true coracoid of the monotremes and mammal-like reptiles.—Dr. F. E. Beddard: Certain points in the anatomy of the Cestode genera *Amabilia* and *Dasyurotænia*.—B. F. Cummings: New species of *Polyplax* (Anoplura) from Egypt. This paper contained a systematic description of two new species of louse based on a large supply of material in spirit collected on *Acomys cahirinus*, Des., and forwarded by the Department of Public Health in Egypt to the Lister Institute, by whom they were subsequently presented to the British Museum. Both the new species were fortunately collected in large numbers in all stages of development, and an account of the larvæ consequently has been prepared.—J. T. Cunningham: The resemblance in form and markings of the plates of paraffin-wax originally obtained by Prof. Kappers, of Amsterdam, to the shells of Molluscs. Examples of these structures had been exhibited at a previous meeting by Mr. R. H. Burne. Mr. Cunningham found that the forms were produced by pouring molten paraffin-wax on to the surface of cold water, and he had no doubt that Prof. Kappers's specimens were produced in the same way by the molten wax running over on to a vessel filled with water. The author concluded that the form and markings were not in either case in any way due to effects of crystallisation as Prof. Kappers supposed.

Geological Society, March 24.—Dr. A. Smith Woodward, president, in the chair.—P. G. H. Boswell: The stratigraphy and petrology of the Lower Eocene deposits of the north-eastern part of the London basin. The following divisions of the Lower Eocene occur in the area:—London Clay—basement-bed only; the Pebble-Beds and accompanying sands; Reading Beds; Thanet Beds. The unconformity of the Eocene upon the Chalk is discussed, and reasons are given for regarding the layer of green-coated flints at the bottom of the Thanet Beds in the area as a true basal conglomerate. Evidence is adduced to show that the London Clay overlaps the Lower London Tertiaries, and rests directly upon the Chalk in Norfolk. The Reading Beds also overlap the Thanet Beds in the western part of the area. A hypsometrical map of the Chalk-surface in the London Basin is presented, and a minimum estimate of the unconformity, in terms of thickness of Chalk removed, is given for the northern part of the basin. Stratigraphical details of the various divisions and descriptions of new sections are given. The variations in lithology of the Reading Beds are described, and it is shown that the Pebble-Beds belong lithologically and petrologically to the Reading Beds, but that their scanty fauna is a London Clay one. The distribution of the sarsens in the area is plotted out on a map, and their petrology is con-

sidered; it is concluded that, in this district, they are derived from the sands of the Reading Beds. The mineral constitution of the various divisions of the Eocene Beds is discussed in detail.

MANCHESTER.

Literary and Philosophical Society, March 9.—Mr. F. Nicholson, president, in the chair.—Sir Ernest Rutherford: Origin of the spectra given by β and γ rays of radium. An account of recent experiments by Sir Ernest Rutherford and Dr. Andrade to determine the wave-length of the very penetrating γ rays emitted from radium. The spectrum of the γ rays was obtained by a photographic method by reflecting the rays from a thin slip of rock-salt. The radioactive source consisted of a fine glass tube containing a large quantity of radium emanation. Special precautions were taken to get rid of the effect of the β rays emitted with the γ rays. A large number of lines were observed in the spectrum over a wide range of wave-length. Two well-marked lines are reflected from rock-salt at 10° and 12° , and correspond to some soft γ rays. There were other strong lines of 1° and 1.7° , corresponding to the very penetrating rays. The shortest wave-length observed was 0.7 Ångström unit, which is about $1/50,000$ of the wave-length of visible light. This radiation has much the shortest wave-length at present known. An account was also given of the methods for determining the magnetic spectrum of the β rays. The rays from a fine source, passing normally in a strong magnetic field, describe a circular path and fall on a photographic plate. A number of well-marked lines are observed on the plate, which correspond to groups of rays of definite velocity. The speed and energy of the β particle comprising each of those groups of rays from radium products have been accurately determined by Rutherford and Robinson. The general evidence indicates a very close connection between the emission of β and γ rays from radio-active bodies, and that the energy of the groups of β rays are intimately related with the frequency of the γ radiation from which they arise. The author outlined a general theory to explain the connection between the β and γ rays.

PARIS.

Academy of Sciences, March 29.—M. Ed. Perrier in the chair.—Edmond Delorme: Artificial limbs for the use of the amputated. Medical treatment is required by the amputated for some time after the wound has healed, if the full benefit of artificial limbs is to be obtained.—J. Comas Solá: Certain rapid displacements of short duration registered by photography. In photographs of the sky taken for the purpose of detecting minor planets, a certain number of stars showed changes of position from hour to hour, which could not be attributed to contractions or deformations of the gelatine of the plate.—J. Comas Solá: The discovery of a new minor planet.—E. Keraval: A family of triply orthogonal systems.—Gaetano Scorza: Singular Abelian functions.—M. Dussaud: New experiments on sources of light of small surface.—O. Bailly: The constitution of glycerophosphoric acid and of lecithin. Egg lecithin is a mixture of two isomers from which a mixture of α - and β -glycerophosphoric acids is obtained, the latter predominating.—G. Tizzoni: The infectious nature of pellagra. Results of researches made in Italy and in Bessarabia. Further studies on the micro-organism previously described by the author under the name of *Streptobacillus pellagrae*.—M. Guépin: The destruction by suppuration and ablation of a considerable part of the brain resulting in no appreciable trouble.—Pierre Delbet: Extra-pericardic cardio-thoracic symphysis.—H. Busquet: The compara-