

McNee demonstrated that it could be transmitted from man to man by the inoculation of a small quantity of blood, and suggested that the usual manner of spread was by the agency of the innumerable lice infesting our soldiers. In 1917 a committee to study this new disease was appointed by the War Office with Sir David Bruce as chairman, and Bacot was invited to join as entomological member. The British Trench Fever Committee showed first that McNee's suggestion was correct and that this disease was transmitted by lice, a fact subsequently confirmed by the American Commission in France. In the course of their experiments Arkwright and Bacot confirmed the observation of Töpfer that minute pleomorphic bodies, of the order of magnitude 0.3 to 0.5 μ and somewhat similar to *Rickettsia prowazeki*, supposed by Rocha Limas and others to be the cause of typhus, were present in the gut of lice which had been fed upon patients suffering from trench fever. They failed to find them in lice with an unexceptional family history, brought up for generations by Bacot and nourished upon his own blood. Bacot studied the development of the little microbes in the gut of the louse day by day after its meal of infective blood, and he and his colleagues established that only lice in which these bodies were present were capable of transmitting trench fever. All attempts to cultivate the organisms have so far failed and the supposed causality of trench fever rests upon these observations of association.

Similar structures had been described by Ricketts and Wilder in 1910 in the gut of lice fed upon typhus fever cases, and later by Wobach in the tissues of patients who had fallen victims to this disease. There was thus reason for supposing that the virus of both trench fever and typhus was of the same nature, and consisted of a new type of microbe which propagated in the tissue of the gut of lice and in the human body should it find access thereto.

Accordingly, when trench fever disappeared from this country, on the cessation of war, leaving many problems concerning it unsolved, Bacot turned his attention to typhus, as this disease presented analogies both as regards etiology and method of transmission. In 1920 he joined the Typhus Research Commission of the League of the Red Cross Society and went to Poland, taking with him a supply of his lice with a clean family history. He was responsible for the insect side of the investigation which, in view of the nature of the problem, was not the least important. The Commission, which has recently published its report, made many valuable observations. It was able to confirm under more rigid conditions of experimentation, earlier work which had been carried out in various parts of the world. The probability that *Rickettsia prowazeki* is the virus of typhus was thereby materially increased, but the labours of the Commission left the evidence resting upon association only.

In the course of work at Warsaw, Bacot accidentally infected himself with trench fever. Being in want of a further supply of lice for his experiments, he collected them from a public bath-house and nourished them upon his person. A sharp attack of the fever followed, and some of the insects were found to harbour the *Rickettsia* he and Arkwright had described in their work for the Trench Fever Committee two years pre-

viously. Afterwards, for some months, he was able to infect his clean stock of lice by feeding them on himself. Returning to London in the summer of 1920, with the collaboration of his colleagues Arkwright and Atkin, Bacot continued his endeavours to settle the matter of the virus of typhus. They were unfavourably situated in London to obtain a supply of typhus material. Consequently, when towards the end of last year an invitation came from the Egyptian Government to study the problem in Cairo, where typhus is endemic, the opportunity was welcomed. In company with Arkwright he proceeded to Egypt early in the year, and was soon installed in the excellent laboratories of the Department of Public Health, presided over by an old colleague, Dr. Charles Todd. The research was advancing with promise and his letters expressed enthusiasm regarding its progress. On March 24 he became ill and died on April 12.

Bacot had a passion for knowledge and a natural aptitude for scientific research. If the attainment of his quest promised to be of service to his fellow-creatures, this was an added attraction. He was well acquainted with the risks attending some of his work but, whilst never reckless, he was not a man to be deterred by danger from the pursuit of a useful inquiry. Its existence indeed appealed to a side of his nature which contributed to the charm of his personality.

His comrades at the Institute are proud of his attainments, but will rather remember him as a dear friend who was always helpful and was never known to be inconsiderate or unkind.

C. J. M.

LOUIS RANVIER.

It must come as a surprise to many of the younger generation of biologists that Ranvier, whose name is immortalised in countless text-books, has but recently passed away. Born at Lyons in 1835, Louis Ranvier was attracted at the outset of his medical career to the study of histology, both normal and pathological. As concerns the minute investigation of the tissues, research and discovery were to all intents and purposes stagnant in France when the youthful Ranvier, full of indomitable zeal and unquenchable enthusiasm, devoted himself to the subject and determined that a study, the foundation stones of which had been laid by the great Frenchman, Bichat, should be worthily pursued. His early work was carried out in a small private laboratory which he equipped in the Rue Christine in Paris, where he and his friend Cornil not only taught the principles of histology to students but also produced, as a result of their joint efforts, the "Traité d'anatomie pathologique," a treatise which rapidly became classical.

Ranvier soon attracted the notice of Claude Bernard, who, recognising his great technical skill, enlisted his services for the College of France in 1867. He was soon put in full charge of a newly instituted Laboratory of Histology, where his reputation and fame grew so rapidly that a chair of general anatomy was created for him, into which he was installed in 1876. For a period of thirty years he was associated with the College of France, where he laboured with untiring zeal and where his most important discoveries were made.

The field covered by Ranvier's researches is exceed-

ingly wide. There is no tissue and scarcely an organ of the body which he did not investigate with characteristic thoroughness. Much of what is to-day sound knowledge of the structure of the connective tissues, glands, nerves, and nerve-endings, we owe to Ranvier. His discoveries in connection with the peripheral nervous system are perhaps the most familiar. It seems incredible that until Ranvier taught otherwise, a medullated nerve was thought to be a continuous tube. The term "nodes of Ranvier," by which he is best known, is most unfortunate. He described the interruptions in the contour of the medullated nerve as "étranglements annulaires." The term "node" is inexcusable and not to be condoned by its usage as an alternative in "constrictions or nodes of Ranvier," a solecism of which many writers are guilty.

Ranvier was not content with describing and delineating the minute structure of tissue or organ but ever sought to discover the functional interpretation of

what he saw. Many of his investigations were to this end, and in this sense he must be regarded as the father of experimental histology. A master of technique, his manipulative dexterity was unequalled, and the laboratory practice of the present day is largely founded on his methods.

Ranvier's numerous writings are a model of clearness and exactitude. Never content with knowledge at second hand, he took such meticulous care to ensure accuracy that his statements are invariably trustworthy. His "Traité technique d'histologie" is undoubtedly the most original text-book on the subject ever written, and bears monumental testimony to his indefatigable energy and boundless resource.

Some twenty years ago Ranvier retired from a life of incessant labour to his country estate. Laboratory and scientific societies knew him no more; as he worked so he rested, revelling in the pleasures of a rustic life. Full of years and honour Ranvier passed peacefully away on March 22.

Current Topics and Events.

MUCH interest has been aroused by reports in the *Times* and other newspapers of the discovery of mummified animals in the Koster caves, 100 miles west of Johannesburg, South Africa. These caves are situated in a district in which numerous stone implements and other evidence of early human occupation have been found. They have therefore been carefully examined by Mr. Harold S. Harger, a well-known geologist, whose report is disappointing. It appears that the mummified remains occur in a thick layer of bat guano on the floor of the main cave, and represent only modern animals. It is not unusual to find such remains in the circumstances described, and there is one known case in Patagonia in which the skin and soft parts even of an extinct animal (a ground sloth) have been preserved. There is no doubt that the caves and surface deposits in the Koster district of South Africa are well worthy of the attention of the local geologists and anthropologists, but they have not hitherto afforded anything of special note.

A LARGELY attended meeting of physicians and others interested in mental hygiene was held in the rooms of the Royal Society of Medicine on Thursday, May 4, in order to inaugurate the new National Council for Mental Hygiene. The chair was taken by Sir Courtauld Thomson, who was afterwards elected first president of the Council. He communicated to the meeting a message of welcome from the National Council of Mental Hygiene of the United States, and expressed a hope that, by the establishment of the British Council, Great Britain would be able to take her proper place in the forthcoming international conference on the subject. He made a special appeal to laymen to join the new movement, so that they might co-operate with the medical profession in a common endeavour to improve the mental health of the country. Dr. Head insisted that mental hygiene is as important as sanitation, that mind and body are inextricably intermingled, and that no structural disease is free

from mental change. We should have been spared, he believed, the recent exhibition of auto-suggestion in this country, if its people had been better educated in mental hygiene. Sir Leslie Scott alluded to the greater assistance needed by those administering criminal justice from experts in mental disorders. Other speakers included Sir Humphry Rolleston, Sir Frederick Mott, Dr. Farquhar Buzzard, Lord Southborough, Hon. Lady Darwin, Major-General Sir John Goodwin, and Sir Maurice Craig. The provisional committee was empowered to draw up a constitution and to elect an executive committee.

THE half-yearly council meeting of the National Union of Scientific Workers was held on Saturday, May 6, at the Caxton Hall, Westminster, Dr. A. A. Griffith, president, in the chair. The report of the executive committee was presented by its chairman, Prof. L. Bairstow, who mentioned the co-operation of the Union with the British Medical Association in regard to removing disabilities suffered by scientific institutions under the Key Industries Act, and with the Teachers' Registration Council on the subject of the danger of parsimony in education. Progress in the negotiations with the British Association of Chemists was reported, and a scheme outlined which it was hoped might be made the basis of an immediate temporary arrangement for joint working, to tide over the period until complete amalgamation could take place. Negotiations on behalf of members had been carried on with the Ministry of Agriculture, the Air Ministry, and the India Office, and satisfaction obtained on many points. The Union had also been in communication with the Inland Revenue Commissioners for the purpose of furnishing them with a typical schedule of expenses incurred by scientific workers in various branches of science with a view of obtaining definite rulings and further concessions. Report was made of the successful working of the Government Section committee, which had enabled members in the various depart-