

Germany than a huge commercial crash, and the iron hand replaced the velvet glove." "Little by little the idea of a necessary war—a war almost to be wished for—became the desire of the working classes; failing it, they might starve, and their employers, the capitalists, be ruined." "After the great war is over the commercial war will be on us again. We must prepare *now*."

To this essay there follow some interesting articles by M. Delloye, by M. Ernest Fourneau, director of the Laboratory of Therapeutic Chemistry at the Pasteur Institute, M. Justin Dupont, Prof. Wahl of Nancy, M. Legouéz, and M. Ribes-Christophle. Among other observations we note one stating that French manufacturers usually only keep pace with current demand for goods; when a period of prosperity sets in, he cannot supply the increased demand, and his customers are driven to buy German goods; for Germans have always reserve plant ready for an emergency. For this reason they are able to execute orders more quickly; what it takes three months to supply in France can be delivered from Germany in a fortnight. M. Fourneau gives much interesting information on German drug manufacture; he concludes: "You know that fraud and slimness pass in Germany for quasi-virtues. . . . Germany, after having tried to frighten its adversary by its terrifying appearance, knows well how to appear humble, insignificant, and invisible." M. Dupont directs attention to the enormous task before the Allies of overtaking the German colour manufacture, which has been elaborated during the past forty years. Drugs, dyes, and explosives are so interlaced that the by-products of one manufacture often serve as the raw material of the others. M. Ribes-Christophle treats of German commerce in Argentina. False labels for goods, and adulteration are common. German firms, too, supported by their banks, *i.e.*, by the Central Government, sell at first at a loss, until they have killed out competitors. Their banks, of which there are branches in Argentina, act as company-promoters.

The impression gained from these articles is that German trade is largely fraudulent, sometimes honest, always methodical; that it is regarded as the duty of the State to support it by all means, moral and immoral; and that France must take steps to exclude it if she is to retain her position as a manufacturing nation. What these steps are has not yet been indicated. We shall look forward with the utmost interest to their decision; but it should be one taken in concert with the Allies.

WILLIAM RAMSAY.

PROF. PAUL EHRLICH.

ONLY recently we lost Löffler, one of the pioneers of modern bacteriology, and now Paul Ehrlich has passed away. He died on August 20, as all good workers might wish to die—suddenly in his laboratory, in full harness, and before the rust of age had dimmed his powers.

Born in 1854 at Strehlen, in Silesia, of Jewish

parents, he was one of the many distinguished Hebrews who have contributed to make Germany's fame what it is in the world of science and art. He was educated at the Gymnasium at Breslau, and afterwards at the Universities of Breslau and Strasburg, where he graduated in medicine. From the outset of his career he took the deepest interest in the chemical relationships of living matter and in the affinities of various reagents for living cells. One of his earliest researches was upon the effects of certain aniline colours upon living tissues, and he devoted much attention to staining methods, devising new stains, and Ehrlich's hæmatoxylin and Ehrlich's triacid stain are stock solutions in the present-day biological laboratory. An investigation on staining methods for the tubercle bacillus led to the discovery that certain dyes possessed a peculiar affinity for this bacillus, and this fact tinged his whole philosophy, and suggested the conception of the specific affinity of certain chemical groups for particular cells and tissues.

He carried out pioneer work in hæmatology, differentiating and classifying the various forms of leucocytes or white blood-corpuscles.

His bent now turned largely on chemical lines. Diphtheria antitoxin had been discovered by Roux and Behring, but discrepancies in its standardisation came to light, and Ehrlich set himself to elucidate the cause of these discrepancies. As an outcome of this work a method of standardisation was evolved which exists to this day, and the strength of diphtheria antitoxin is now practically always described in Ehrlich "units." This work led on to an investigation of the mode of genesis of antitoxin, and the publication of the now famed "side-chain theory" of the formation of anti-bodies in general.

Ehrlich also performed some notable researches on cancer, and developed the atreptic theory of certain forms of immunity, but this investigation was dropped before long, probably because he foresaw that it was unlikely to bear fruit.

He now returned to some of his earlier work on the specific affinity of dyes and other substances for certain cells and micro-organisms, particularly the protozoan parasites. In trypan red he found a substance which attacked certain species of trypanosomes and cured the infection caused by them, but he failed to find a substance which would cure the allied trypanosomiasis in man. Besides dyes, a large number of complex organic compounds of arsenic and mercury were prepared and tested by himself and his assistants, and resulted in the discovery of "606," or salvarsan, as a cure for syphilis.

These are some of his achievements. Not only have his discoveries already benefited mankind in the direct alleviation of human suffering, but his researches into the perplexing phenomena of immunity and chemo-therapy have opened the way for further discoveries in these directions. He must be regarded as a pioneer who has carved the first track through that dense forest of the Unknown, which the worker of the future, following

in his steps, will widen into a broad highway. Ehrlich was honoured by almost every university. He was Croonian lecturer of the Royal Society, and joint recipient with Metchnikoff of the Nobel prize, and his genial and striking personality was well known to British bacteriologists. In 1897 he was created Geheimrath, and in 1911 Wirklicher Geheimrath.

In the present strife of nations, we British will be the first to recognise that in the death of Paul Ehrlich a great man, worthy to be ranked with Pasteur, Lister, and Koch in his particular line, has passed away.

FREDERICK VICTOR DICKINS, C.B.

WHEN it became known to the friends of F. V. Dickins only a few days ago that a serious surgical operation had been suddenly called for, they sadly recognised that the end was probably not far off. Heart failure and the weight of over seventy-seven years closed his life on Monday, August 16.

Dickins was a remarkable man and had enjoyed a singularly varied and interesting life. Medicine first attracted him, and after graduating (1861) M.B. and B.Sc. in the University of London, he served for five years in the Navy between China and Japan. Then he took up law, and having been called to the bar in 1870 he practised in Yokohama for many years, and at this time began to give increasing attention to those Oriental studies which occupied him to the end of his life. In 1882 he became Assistant Registrar to the University of London, the late Arthur Milman being then Registrar. It was in this capacity that he became known to the large circle of eminent men connected with the university, and especially the examiners. Soon after his appointment the practical examinations of the university were considerably amplified in scope, and examinations in practical physics were introduced for the first time. It is not too much to say that the successful conduct of these examinations at the outset was largely due to the energy of the assistant registrar, who not only obtained the necessary apparatus, but set up much of it with his own hands when required for the use of the examiners. A technical assistant for this business was employed later. He succeeded Milman as registrar in 1896.

Dickins read widely and was familiar with the chief advances in physical and natural science, in which he took great interest. But his speciality was Japanese and, to a less extent, Chinese language and literature. After retiring from the registrarship in 1901 his leisure was therefore naturally occupied with his favourite studies, and we owe to his pen the two volumes of "Primitive and Medieval Japanese Texts," published by the Clarendon Press in 1906, and the translation of the charming Japanese "Story of a Hida Craftsman" in 1912, besides other works.

Dickins was a member of the Athenæum, but owing to failing health and distance, he retired from the club two years ago.

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NOTES.

THE Royal Society is compiling a register of scientific and technical men in Great Britain and Ireland, who are willing to give their services in connection with the war. The register will be classified into subjects, and will ultimately constitute a large panel of men of standing, whose services will be available whenever any Government department or similar authority requires specialist assistance. The register is being co-ordinated with those independently compiled by other societies and institutions, but the Royal Society would be glad to have applications for forms from such members of the staffs of colleges and technical institutions as have not yet been registered by any society. The Royal Society is also drawing up, with the co-operation of the principal societies and institutions, a list of scientific and technical men actually on active service in His Majesty's forces. Any names, with rank and unit, for this list will be gratefully received by the secretaries at Burlington House, Piccadilly, W.

We learn that Mr. M. T. Dawe, formerly a member of the gardening staff of the Royal Botanic Gardens, Kew, sometime Superintendent of the Botanical and Forestry Department, Uganda, and lately Director of Agriculture, British East Africa, has been appointed Agricultural Adviser to the Government of Colombia.

THE Chilean war vessel *General Baquedano*, which has recently returned from Easter Island, has brought news of the Easter Island Expedition of Mr. and Mrs. Scoresby Routledge up to June 8, at which date the expedition had been fourteen months in residence, during which time a careful survey had been made of the existing antiquities and such ethnographical information collected as is still available.

THE Hutchinson medal for research, of the London School of Economics and Political Science, has been awarded to Mr. R. C. Mills for his thesis on "The Colonisation of Australia, 1829-1842: the Wakefield Experiment in Empire Building," and the Gladstone Memorial prize to Mr. C. M. Jones.

WE regret to hear that Capt. W. E. G. Atkinson, son of the late Prof. Atkinson, of the Staff College, Camberley, was killed at the Dardanelles on August 6. Capt. Atkinson was educated first at Clifton College and afterwards at the Wye Agricultural College, where he had a very successful career. In 1902 he left Wye and proceeded to the Rothamsted Experiment Station as a post-graduate research worker. Prior to that date there had been very few such workers at any time, and none for a number of years. Capt. Atkinson was the first of the modern contingent, which has since swelled considerably. He worked with Mr. Hall on the problem of quality in wheat. Millers and farmers alike recognised the marked differences between varieties of wheat, some—the so-called strong wheats—giving grain of high baking quality, possessing great capacity for forming large, well-piled loaves, while, others—known as weak wheats—gave rise to squat, heavy-looking loaves, much less attractive in appearance. No satisfactory