where he made the acquaintance of Sir Astley Cooper, whom he assisted in his work on hernia and first became impressed with the inefficiency of the older modes of teaching anatomy. In 1797 he returned to Dublin and set up in practice. Two years later he commenced clinical teaching and also lectured on surgery in his private rooms. In 1804 he was appointed professor of anatomy and surgery at the Royal College of Surgeons in Ireland and held that post for thirty-two years. He was also surgeon to Steeven's Hospital, and was twice president (in 1802 and 1830) of the Royal College of Surgeons in Ireland. Selections from his works consisting chiefly of "Practical Observations on the Venereal Disease", in which he maintained that syphilitic children nursed at the breast often infect wet nurses but never their own mother—an observation afterwards known as Colles's law—appeared in the New Sydenham Society's publications in 1881 under the editorship of Robert McDonnell. His name has also been attached to a fracture of the lower end of the radius, which he described in 1814 in the *Edinburgh Medical and Surgical Journal*.

Theodor Engelmann (1843–1909)

THEODOR WILHELM ENGELMANN, an eminent German physiologist, was born at Leipzig on November 14, 1843, the son of a well-known publisher. He received his medical education at Jena, Leipzig, Heidelberg and Göttingen, and qualified at Leipzig in 1867. Directly after qualification he became assistant to Donders at the Physiological Institute at Utrecht, where he was appointed professor of general biology and histology, and succeeded Donders in the chair of physiology in 1888. In 1897 he succeeded Du Bois-Reymond as professor of physiology at Berlin, where he died on May 20, 1909. His most important work was the discovery of the cones and pigment cells of the retina. Besides studying the mechanics and thermodynamics of muscular contractions, he published works on ciliary movement (1868), spectrophotometric observations and an obituary of Helmholtz (1897). He was also co-editor of *Archiv für Physiologie*. He was well known to physiologists in Great Britain, where he was elected an honorary member of the Physiological Society in 1898. He was elected an honorary member of the American Physiological Society in 1904.

Plans for International Trade

UNDER the title "New Plans for International Trade", the Institute of Statistics, Oxford, has issued a Supplement to its Bulletin (No. 5, Vol. 5) reviewing the principles embodied in the proposal of the British Treasury for an International Clearing Union and that of the American Treasury for an International Stabilization Fund. An introductory paper by the editor points out that international trade exists because some goods can be produced relatively cheaper in some countries than in others, and the aim of an international currency plan must be to lay down a code of rules which countries agree upon and can be relied upon to apply in international trade and finance in different circumstances. The test questions are: (1) Are adequate provisions made for furnishing each country with liquid reserves for re-starting international trade after the disruptions of the War and pre-war periods, as a means of enabling all countries to partake in international trade and reap the benefits of an exchange or loan of goods? (2) How can we prevent countries from becoming illiquid again? (3) How can we keep check upon and regulate short-term borrowing and lending, if they are a disruptive element? (4) How can we make an international system workable and compatible with any form of social-economic organization and any internal policy which member countries might wish to adopt? (5) Can we introduce a steady expansionist force into international trade, which would neutralize, or, if necessary, over-compensate the effects of restrictionist policies of some member States on the rest of the trading community?

Discussing the British plan, which purports to exert pressure on any country whose balance of payments with the rest of the world is departing from equilibrium in either direction, E. F. Schumacher states that the plan aims at more than equilibrium but does not fully face the issues of exchange control. He concludes that it would create international liquidity on a generous scale—with all that this implies for the freedom and growth of international trade—and that it is imbued with a spirit of expansion and is groping, though not very successfully, for ways and means to create an international monetary mechanism favourable for expansion. The American plan does not seem to offer a workable system. Its principal defect is a quantitative one. Even if the Stabilization Fund were considerably enlarged, there would remain the difficulty that the Stabilization Fund technique itself imposes a more or less rigid maximum limit upon individual surpluses.

In the following paper, M. Kalecki and E. F. Schumacher propose an amendment to the British plan in which an orderly supply of purchasing power to deficit countries through long-term lending by the International Investment Board is made possible. The concluding paper, by T. Balogh, on "The Foreign Balance and Full Employment", examines further the question of how any single country can be enabled to maintain stability at full employment in a world system in which unemployment or inflation exists in other countries.

Dehydration of Food by Radio-Frequency Energy

THE Industrial Electronics Division of the Federal Telephone and Radio Corporation, co-operating with the Office of the Quartermaster-General of the United States Army, has developed a process of dehydrating food by means of radio-frequency energy. The process is described briefly by Vernon W. Sherman in a recent article (*Elec. Comm.*, **21**, No. 2; 1943). The electronic dehydration method not only makes it possible to remove 99 per cent of the moisture content but it also permits this high degree of dehydration after the vegetables have been compressed into a small block or briquette 6 in. × 3 in. × ¾ in. Compression of vegetables prior to total dehydration is an unprecedented procedure, other processes requiring exposure of as much of the vegetable surface as possible to facilitate evaporation. With all but one per cent of the moisture removed, it is possible to pack all types of dehydrated vegetables in sealed containers and transport them to any part of the world without danger of decomposition. The length of time vegetables may be kept in good condition increases very greatly as the moisture content approaches one per cent. Evidence now indicates that vegetables dehydrated by the electronic method will not deteriorate over a period of one to two years even in hot, humid climates.

Vegetables reconstituted after electronic dehydration may be cooked and served in the same way as fresh vegetables. Reconstitution is accomplished by soaking the vegetables in water. They then return to their original colour and consistency and retain their normal taste and aroma. The vitamin content of electronically dehydrated vegetables is especially high, due apparently to the much shorter processing time. The exact method of dehydration cannot be disclosed at present. Briefly, however, 80 per cent of the moisture is removed by conventional methods, leaving the vegetables pliable but without formation of 'case hardening'. The vegetables are then compressed into bricks and the remaining moisture is removed electronically, after which they are ready to be wrapped in paper, wax coated, packed and shipped. The whole procedure is well adapted to automatic straight line production. Laboratory results show that one pound of water may be removed electronically with less than one kWh. of energy, a figure which is economically good in comparison with other methods. In addition to vegetables, dried whole milk also has had its moisture content reduced electronically from two per cent to one per cent. This small difference makes it possible to ship dried whole milk without danger of its butter fat content becoming rancid. Unlike dried skim milk, dried whole milk can be reconstituted to be as palatable and nutritious as fresh milk. Apart from the importance of this electronic dehydration achievement, the process represents another of the many outgrowths of fundamental research and development in industry. Electronic dehydration of foodstuffs was undertaken by the Federal Telephone and Radio Corporation as a co-operative and non-remunerative project to aid in the war effort.

Recent Advances in Public Health Measures

FROM the *Fight Against Disease*, 31, 1943, issued by the Research Defence Society, we learn that six anti-vivisection societies reported in the last pre-war year an income of more than £50,000. The Research Defence Society, on the other hand, got along vigorously in 1942 on about £500. Its report for 1942 gives interesting details about the prevention of a wide outbreak of smallpox when it appeared in Scotland in May 1942. Some of us who had to pass through Glasgow in July of that year remember well the encouraging spectacle of the people crowding to the vaccination centres. About 500,000 people were vaccinated and by July 31, thirty days after the vaccination campaign had begun, the last case of smallpox was reported. The report also deals with the remarkable results of immunization against diphtheria. There must be few intelligent people who will refuse their children this inestimable benefit. If any are still disposed to do so, they should read W. T. Russell's report, published by the Medical Research Council, on the epidemiology of diphtheria during the last forty years.

The Ministry of Health, Ministry of Information and Central Council for Health Education send us samples of the publicity material issued by them for use in the campaign against diphtheria. Sir Wilson Jameson calculates that diphtheria kills someone in Great Britain every three or four hours and every twenty minutes sends a child to hospital. The number of children who have been protected is not enough. Children under five are most likely to suffer. It is astonishing that parents can still fail to take their children to receive this safe, simple treatment, obtainable free through any medical officer of health. It should be obtained now, before the winter comes.

The Medical Research Council sends us another valuable memorandum (War Memorandum No. 10) entitled the "Medical Use of Sulphonamides". This deals with the chemistry, pharmacology, dosage, toxicity and supply of these drugs and with the treatment of specific infections with them. They have been given so many names that the lists here given of the alternative names of each compound will help to prevent confusion. Appendixes deal with the estimation of the concentration of sulphonamides in the body fluids, with tests for sulphonamide-resistance in bacteria and with the sterilization of sulphanilamide powder.

Authority in Medicine

IN the Linacre Lecture delivered at St. John's College, Cambridge, on May 6, 1943, Prof. Major Greenwood, after a graceful tribute to previous lecturers including Sir Thomas Watson, Sir Humphry Rolleston, Sir George Newman and Dr. W. W. C. Topley, dealt at length with the doctrine of Galen, with whom Linacre was familiar, and particularly his work on epidemiology, general hygiene and medical psychology. Prof. Greenwood regards Galen's epidemiological influence as bad because he overrated the creative power not of Nature but of his own intelligence, and never considered alternative hypotheses as was done by John Graunt fifteen hundred years later. Galen's work on personal hygiene, which Prof. Greenwood regards as the most readable of his books, contains an admirable description of practical dietetics, physical training and the Horation philosophy of life. As regards medical psychology, according to Prof. Greenwood, Galen was in advance of any medical writers of the Renaissance. Passing on to the subject of experimental epidemiology, in which he was associated with Dr. Topley for more than fifteen years, Prof. Greenwood points out that in acute infectious diseases like typhus pure laboratory work has created an applied science of immunology which owes nearly everything to the experimental method. The lecture ends with an encomium of the late Sir Walter Fletcher, secretary of the Medical Research Council, of whom he says that "he fought for and secured a scientific freedom in state-aided medical research".

Archæological Research in Ulster

IN 1935 the Government of Northern Ireland agreed to pay 60 per cent of the wages of unemployed labourers engaged for the purpose of archæological excavation, up to a total sum of £500. Later the percentage was raised to 80. This method of dealing with the then acute problem of unemployment was to some extent copied from that already in operation in the Irish Free State. As a result, much valuable excavation was undertaken in 1935 and succeeding years, and important information has come to light. More particularly have the various museums and archæological societies, which have taken advantage of the opportunity, concentrated on the study of the North Irish megalithic monuments. Ireland's geographical position is such that the island was a very important area in the days when the megalith builders were wandering about parts of western Europe. Northern Ireland has its full share of these