Würzburg Castle—the most striking feature of which was a large collection of the sculptures of Tilman Riemenschneider (1460–1531)—were the main social items in the proceedings, which were essentially informal. As in the case of the Halle celebrations, detailed reports will be published in the *Nova Acta Leopoldina*, including a full account of Prof. Gallwitz's researches. But, as yet, no copies of the current year's issue have reached the British bodies who were recipients before the War (and whose publications have been received up to date by the Academy), although at the time of the Halle meeting it was hoped to make up the deficiency forthwith.

R. C. H. YOUNG

FARM WATER SUPPLIES

ON October 21, under the auspices of the Society for Applied Bacteriology, a series of papers were read on various aspects of "Farm Water Supplies". The introductory paper was given by Mr. G. T. Morgan (Ministry of Agriculture and Fisheries), who at the outset emphasized the great importance of cleanliness in milk production and the significance of water supplies in this connexion. Of the 158,000 milk producers in Great Britain, 40 per cent own less than ten cows, and a large proportion still have inadequate and unsatisfactory water supplies to meet the estimated daily requirement of some 30–35 gallons per animal. With so many small units it is difficult to effect immediate improvements, particularly when so many of them have been producing satisfactory milk for many years. Information is being collected continuously, supplies are checked, and advice is given for improving their quality; reasonable time being allowed to correct faults and to effect the desired improvements.

Sir William Savage (Taunton), the eminent authority on public health matters, emphasized the need for a practical approach to the problem, since it is clear that piped supplies for all agricultural purposes are not possible, first on economic grounds and, secondly, because there is not sufficient water available. The quantities and qualities required must, therefore, be related to their uses. On only rare occasions have water supplies been incriminated in epidemics of bacterial infection, and in these cases the *Salmonella* and enteric organisms have been involved. Moreover, for most dairying purposes, the standards of water supplies need not be as high as those for general domestic supplies. Well and stream waters are quite satisfactory for animal drinking and for byre washing. Pure supplies are essential for washing all surfaces which come into direct contact with the milk. Sir William was sceptical of chemical disinfection, since this is usually carried out by unskilled farm hands.

Mr. W. A. Cuthbert (Leeds) said that 97 per cent of farm water supplies are from wells, usually shallow ones, or from springs. By means of a series of lantern slides he illustrated the unsatisfactory nature of many such wells and the difficulties of tracing the real sources of some of the springs. Infection in these waters are mainly found to be due to human pollution, which can be eliminated by appropriate protective measures, although these often involve reconstruction. Chlorination should also be employed, but this cannot be relied upon entirely to render a bad water safe. In farm water supplies, the counts of *Bact. coli* and

coli-aerogenes groups vary independently, so that differentiation of faecal and non-faecal organisms is of little value for diagnostic purposes. Topographical examination of all supplies is essential and should be considered along with bacteriological findings before expressing judgment on any supply. Numerical standards for bacterial content are in themselves of no value in assessing farm water supplies because of the considerable seasonal variations encountered. Investigation has shown that factors responsible for this variation include soil temperature and, to a less extent, rainfall.

Dr. J. H. McCoy (Hull), considering the significance of polluted farm water supplies in relation to human infection, said that standard bacteriological tests cannot of themselves guarantee the non-pathogenicity of any supply. Topographical examination is a first essential to eliminate obvious faults. Epidemics of milk-borne enteric infections are traceable mainly to carriers, but a small number is undoubtedly attributed to the water supply, for example, the Croydon epidemic of 1937. Dr. McCoy also directed attention to organisms likely to cause spoilage in dairy products, such as lipolytic and proteolytic bacteria in cheeses, but said that these should not be present in large numbers in properly handled milks. Mr. T. C. Ketchen (Ministry of Agriculture and Fisheries), again emphasizing the practical and financial aspects, described in detail several ways in which the design and maintenance of farm water systems could be improved. Examples were given of how these could be effected by fencing off springs and wells from animal contact, by substituting bore-holes for shallow wells, by re-directing and piping flows from springs, or by proper walling and fencing of well-mouths.

The discussion was opened by Dr. Windle Taylor, who emphasized the importance of chemical tests on waters, and expanded further the significance of the *Bact. coli/coliform* ratio, stating that faecal *Bact. coli* appears to survive much longer in water than was originally thought.

INTERNATIONAL SANITARY REGULATIONS

FOR more than a hundred years the progressive nations of the world have endeavoured to arrange a uniform sanitary code to govern international traffic and to utilize the best preventive measures against the importation of infectious diseases, especially cholera, plague and yellow fever. Important work to this end was done by the Pan-American Sanitary Bureau, the Office International d'Hygiène Publique, and the Health Organization of the League of Nations¹. The development of air travel led to the International Sanitary Convention for Aerial Navigation, afterwards modified in 1944, like the convention of 1926 for maritime traffic.

During the first half of the present century there were as many as thirteen conventions or diplomatic arrangements relating to health control measures to be taken at frontiers. None of these conventions completely superseded all its predecessors, nor were all the States parties to these arrangements, some participating in certain of them and not in others. This disunity caused trouble and confusion in international traffic. Further defects were the delay in ratification, which prevented the application of the agreed measures rapidly and simultaneously; and

the difficulty of revising them expeditiously in the light of scientific and technical progress, experience gained and new epidemiological knowledge.

The United Nations World Health Organization was established in 1946, and in its constitution was given authority to adopt international sanitary regulations. Without delay, the Interim Commission of the Organization appointed expert committees to prepare a revision of existing sanitary conventions. They studied such questions as the sanitary control of the Mecca Pilgrimage, modern advances in epidemiology and methods of preventing transmission of disease by insect vectors. The technical documentation thus produced enabled the Expert Committee on International Epidemiology and Quarantine, with the help of its legal sub-committee, to prepare preliminary draft international sanitary regulations. In April-May 1951 these regulations were considered by the special committee appointed by the Third World Health Assembly at thirty-six plenary meetings held in the Palais des Nations, Geneva, under the chairmanship of Dr. M. T. Morgan (Great Britain). After receiving comments and suggestions from the delegates of the member States, a final draft was prepared which the special committee submitted to the Fourth World Health Assembly. The text of the Regulations was adopted unanimously on May 25, 1951, by the representatives of the sixty governments present².

The first part of the official record of the International Sanitary Regulations consists of the proceedings of the special committee, appointed by the Third World Health Assembly, and of the plenary session of the Fourth World Health Assembly. The second part of the volume contains the text of the Regulations with an explanatory memorandum, a table of comparison between the provisions of the Regulations and those of previous sanitary conventions and similar agreements, and an index to the Regulations. The Regulations are a revision and a consolidation of the text of the numerous previous conventions and agreements; they came into force for all member States of the World Health Organization (and also for those non-member States which so signify) on October 1, 1952.

Turning to the Regulations themselves, they are framed in the endeavour to secure maximum security against international spread of disease with minimum interference with world traffic. They revise and consolidate previous provisions on plague, cholera, yellow fever and typhus, including the Pan-American Sanitary Code, Havana, 1924. Relapsing fever, being suitable for control in ports, airports and at international frontiers, has been added. Supplementary regulations dealing with measures for preventing the spread of other epidemic diseases may be added from time to time, and already are envisaged as regards malaria.

It is required that the appearance of a quarantinable disease in a territory, and, if necessary, its continued existence, shall be notified to the Organization, which will report the information to all health administrations to which the Regulations apply. Thus health administrations will have a world-wide knowledge of the epidemiological situation of quarantinable diseases. In measures for the prevention of the importation of pestilential disease, it is intended that a State shall chiefly rely on its own public health service. The Regulations concerning plague, cholera, yellow fever, typhus and smallpox include all modern scientific methods of prevention. Vaccination is

advised in the case of yellow fever; but not as regards typhus, because modern insecticides, properly applied, and disinfection where appropriate, afford adequate security. Rules governing the health control of the Mecca Pilgrimage have been added.

After reading the Regulations, including the procedure for acceptance, reservations and rejections, one obtains the impression that a great step forward has been made in the international control of epidemic disease. When all the governments of the world adopt the Regulations and implement them, they will protect not only their own frontiers from pestilence, but will also materially contribute to the health of all nations.

A. S. MACNALT

¹ MacNalty, Sir Arthur, *Nature*, 170, 108 (1952).

² World Health Organization. Official Records of the W.H.O., No. 37: International Sanitary Regulations; Proceedings of the Special Committee and of the Fourth World Health Assembly on WHO Regulations No. 2. Pp. iv+443. (Geneva: World Health Organization; London: H.M. Stationery Office, 1952.) 16s. 3d.; 2.25 dollars; 9 Sw. francs.

COPYRIGHT AND THE SCIENTIST

TO the scientific man, nurtured in the tradition of the greatest possible freedom for the circulation and interplay of new scientific knowledge, anything that tends to restrict that freedom is liable to be irksome. If the Copyright Act of 1911 was guilty of causing (or more accurately of perpetuating) uncertainty among the general public as to the extent to which published works might be reproduced, it is not surprising that it should have appeared to the scientific worker to be something of a maze, any tortuous path of which might lead him to wrongdoing. Apart from such general uneasiness, three specific factors have in recent years given added point to the problem. First, and probably the least troublesome, the growth in the use made of review literature has brought out the need for some clearer definition of the degree to which a work might be quoted without infringement of the "fair dealing" provisions of the Act. Secondly, the copious increase in scientific and technical literature during the present century has brought with it a corresponding need for digests and summaries for convenient record by the research worker. Thirdly, advances in photo-copying and microphotography have simplified the reproduction of tables of results, technical reports and periodical articles and virtually removed the principal "disincentive" to copying, namely, the laborious process of manual transcription. If the Report of the Copyright Committee* set up by Mr. Harold Wilson, then President of the Board of Trade, in April 1951 does not entirely resolve these problems, it does provide a reasoned commentary on them and its recommendations will doubtless form the basis of any new legislation that may be introduced.

It says much for the good sense of scholars, authors and publishers alike that no test case has so far been brought in British courts. Yet it is virtually certain that the law of copyright, as it now stands in relation to the limited copying permissible of any work "for the purpose of private study, research, criticism, review or newspaper summary" has been frequently infringed in the scientific field. The facts that, first, infringement has probably taken place either in ignorance of the law or from a lack of understanding

* Report of the Copyright Committee, Cmd. 8362. (London: H.M.S.O. 4s. 6d. net.)