

Ecker expresses the hope that the college whose members he is addressing will officially adopt standard methods for this purpose. There is much to be said for authoritative pronouncement on matters of this kind, based if necessary on a reinvestigation of the methods in use, taking account first and foremost of their dependability, but, having assured that, also of their convenience and cost. To define the best methods of sterilizing all surgical apparatus in general use would be to sweep away a vast mass of varied ritual which, apart from its merits or defects, is a burden and a source of confusion to the nurses who have to carry it out. This is no new subject: the pitfalls of steam disinfection, the inefficiency of alcohol, and the limitations of formaldehyde, for example, have all been discussed in this *Journal* in recent times, as have the new problems in sterilization constantly presented by the ever-increasing complexity of surgical apparatus and the variety of materials used. It is not too much to say that a general overhaul of aseptic technique would benefit everyone concerned.

CROSS-INFECTION IN WARDS

Hospital infections, once a terrifying scourge, are not now as common or dangerous as until nearly the end of last century, but if we have flattered ourselves that they no longer happen studies made during the past few years should have disabused us. Everyone knows that a second disease may occasionally be acquired in a fever hospital, but what we have learned lately concerns the wards of general hospitals and varied types of infection the spread of which can only be traced by detailed bacteriological study. The work of Okell and Elliott on cross-infection by haemolytic streptococci in ear, nose, and throat wards first established this method of study; another example of its application is to be found in the recent paper by A. A. Miles¹ and others on the hospital infection of war wounds. A systematic study by this method in the hospital of its origin is also described by Joyce Wright²: this was carried out in the children's wards at University College Hospital, covered a period of one year, and was designed to trace the migrations of haemolytic streptococci. All patients had throat swabs taken on admission and at intervals of a week thereafter; nurses' throats were also swabbed weekly, as were any septic or other lesions as they arose which were likely to be streptococcal. The Griffith type of all streptococci was determined, a proceeding to which this sort of detective work owes almost the whole of its value; but for the almost certain proof of identity between strains which can thus be secured the interpretation of such studies would be mere guesswork. Of a total of 551 cases thirty-six had haemolytic streptococci in their throats on admission; seventy-two (13.1%) acquired a haemolytic streptococcal infection of some kind during their stay in hospital. Most of these individual cases formed items in well-defined outbreaks, some having the dimensions of an epidemic, each due to a single type of streptococcus. Each of these outbreaks comprised a variety of clinical conditions—sore throats, otitis media, wound infections—as well as latent cases in which the organism existed in the throat without producing evident effects. That they were recognized as outbreaks having a single cause was due to their analysis in the laboratory; otherwise the overt cases would doubtless have been accepted as misfortunes in the general run of

common experience, while the latent infections would of course have been unrecognized. The exact method of spread was not determined; cubicle isolation prevented it, but whether any measure short of this will be effective remains to be decided. A somewhat similar study has been made by H. D. Wright, H. R. Shone, and J. R. Tucker³ in diphtheria wards. Here proof of cross-infection depends on the existence of *gravis*, *intermedius*, and *mitis* types of *C. diphtheriae* and the demonstration that a change of type has occurred in the individual throat; this method, of course, cannot reveal all cases of cross-infection, since the newly acquired infection may be of the same type as that existing before. Nevertheless in over 10% of cases in ordinary diphtheria wards reinfection was proved by this means; where bed isolation was practised it occurred in about 5%, while in cubicle wards it rarely occurred at all. Here again the mode of spread is uncertain; contact between patients and carriers among the staff are possible factors, but the most suspicious finding was the presence of fully virulent diphtheria bacilli, often in large numbers, in floor dust, coupled with the fact that old-fashioned methods of sweeping were employed. It is becoming abundantly clear that the oil treatment of floors recommended by Van den Ende and others,⁴ possibly extended as they suggest to blankets, is the first necessity in preventing hospital infections caused by diphtheria bacilli and haemolytic streptococci. Only when this wide-open avenue of spread has been closed, as far as feasible precautions can close it, shall we be able to decide what other channels of infection remain to be stopped.

BISMUTH IN SYPHILIS

Since the introduction of bismuth as a therapeutic agent in the treatment of syphilis there has been much speculation and discussion concerning its mode of action and the dosage and toxicity of the numerous preparations employed. Kolmer and his associates⁵ concluded from some experiments in rabbits that toxicity did not necessarily run *pari passu* with the amount of bismuth metal injected; that toxicity and therapeutic effectiveness vary according to solubility, not only in the tissues but in the vehicle, and to rate of absorption and excretion; and that both factors are influenced by chemical constitution. Further, as estimations of bismuth in the blood are not a practicable way of determining maximum therapeutic effectiveness consistent with minimum toxicity, recourse was had to urine estimations. It was found that in the case of infected rabbits the urinary level of bismuth required for biological cure was dependent on both the dose and the length of time it was maintained; a certain minimum level is required even though there is prolonged excretion. Human beings require relatively more metal per kilogramme of body weight than rabbits, and it has been calculated that for optimum therapeutic results the amount of bismuth should be 35 to 45 mg. per dose, which would give a urinary excretion of 2 to 4 mg. The amount of any particular preparation injected and the frequency with which it is given will depend on whether the preparation is water-soluble, oil-soluble, or insoluble, and since absorption of the drug varies not only according to the compound but also in relation to the individual himself occasional determinations of urinary bismuth are recommended. Experiments carried out on spirochaetes prove that bismuth is spirochaeticidal both *in vivo* and *in vitro*. Whether this is due to the element itself dissociated from its compounds or whether it effects a union with

¹ *British Medical Journal*, 1940, 2, 855, 895.
² *J. Hyg., Camb.*, 1940, 40, 647.

³ *J. Path. Bact.*, 1941, 52, 111.

⁴ *Lancet*, 1940, 2, 133.

⁵ *Amer. J. Syph. Gon.*, 1940, 24, 415.

⁶ *Ibid.*, 439.

the tissues is not established. The latter appears to be more likely, but the metal may act in part by the stimulation of antibody production which results from the release of antigenic substances from killed spirochaetes. As a result of their experiments the authors give a list of recommended doses of eleven different bismuth preparations commonly used in America; water-soluble preparations should be given twice weekly, others once every seven to ten days. Bismuth has also a prophylactic action in syphilis, as shown by the experiments of Kolle,⁷ who failed to infect rabbits so long as there was any of the metal in the ear, and by Sonnenberg,⁸ who was able to protect prostitutes from acquiring the disease by regular intramuscular injections of the subnitrate. These methods, however, are not a practical proposition for mass prophylaxis of human beings. Hanzlik and his co-workers⁹ found that when sobisminol, a preparation which has a curative action when taken by the mouth, was given to rabbits it protected them against experimental infection. In view of the fact that the drug, although comparatively non-toxic, has a curative action in human syphilis, it is suggested that it could be used for human prophylaxis with much hope of success. Although this appears to be theoretically probable, it has not yet been tried out, and the average man will hardly dose himself for a week before exposing himself to possible infection, and after exposure the drug is not likely to prove successful, since the spirochaetes will have established themselves before the bismuth has reached an adequate concentration in the tissues.

PERITONEAL IRRITATION AND INTESTINAL ACTIVITY

The surgeon is constantly confronted by the problem of the management of abdominal distension resulting from peritonitis. The causation of this distension has immediate bearings upon the question of treatment. In the absence of gross obstruction associated with colic, a "mechanical" view must favour operative treatment. On the other hand, if the distension is regarded as neurogenic and due to reflex inhibition resulting from peritoneal irritation, then the treatment must be on conservative lines. From the point of view of management the important case is the one in which there is abdominal distension in the absence of all intestinal activity. In the current number of the *Journal*, Douglas and Mann report a series of interesting experiments which shed a good deal of light on the pathological physiology of the condition. These workers produced exteriorized portions of intestine in rabbits and dogs after the method introduced by Biebl. The exteriorized loop remains in continuity with the bowel, has an intact nerve and blood supply, and is enclosed in a bipedicled skin tube completely shut off from the general peritoneal cavity. Subsequently various irritants were injected into the general peritoneal cavity and observations recorded on the activity of the exteriorized gut segment. For the purpose of these experiments inhibition was considered to mean absolute quiescence of the intestine. In the control series of cases it was shown that the injection of Ringer-Locke solution into the general peritoneal cavity produced an effect on intestinal motility. When standardized irritants were injected these constantly led to prolonged arrest of intestinal movements in the exteriorized segment. This arrest occurred in normal animals after section of both vagus nerves, after section of one splanchnic nerve, and after bilateral adrenalectomy. On the other hand, this inhibition did not

occur, or was only temporary, after degenerative section of both splanchnic nerves. On the basis of these experiments the authors conclude that intestinal inactivity is of the nature of reflex inhibition, since by reason of the extraperitoneal situation of the loop of bowel the stimulus is delivered to afferents other than those in the loop. The authors hesitate to apply their experimental results too directly to clinical work, but suggest that their evidence supports the neurogenic explanation of abdominal distension associated with a localized peritonitis. Under these conditions operative treatment by means of enterostomy, etc., is contraindicated, and measures designed to overcome the splanchnic inhibition are indicated—namely, splanchnic block, acetylcholine, or prostigmin.

WARTIME RESEARCHES ON MILK

In war the dairy cow takes rank as "Farm Animal No. 1." Milk, a home-produced food obtained from animals deriving more than 80% of their food requirements from home-grown feeding stuffs, is a means of supplementing and balancing a diet which might easily become in wartime poor in everything except carbohydrates and calories. The shadow of war is cast upon the annual reports of two dairy research institutes lately received, though one of them, that of the National Institute for Research in Dairying, Reading, is for the year ending September, 1939, and the other, that of the Hannah Dairy Research Institute, Ayr, is for the year ending March, 1940. In both institutes the maintenance of as high an output of milk as possible in emergency conditions has become the keynote of the work, and long-range investigations have receded into the background in favour of the quicker but less satisfactory methods of empirical investigation and piecemeal solution. Among other matters with which the National Institute has concerned itself is wartime cheesemaking. Rennet, which is used to make milk coagulate, is an animal product, an extract of a calf's stomach, but a satisfactory method for extraction of a milk-coagulating enzyme from a vegetable source has been found, and cheese for which vegetable rennet was used has recently been produced. Much further work has been done at Reading on the estimation of vitamins in milk. Biological methods had already shown that commercial pasteurization brought about a definite though small loss in the vitamin B complex, and that commercial sterilization destroyed some 30% of vitamin B₁, but had no apparent adverse effect on vitamin B₂. These findings have now been extended by the application of chemical tests, according to which pasteurization destroys 10% of vitamin B₁ but is without effect on riboflavin, while the loss of B₁ in sterilized milk has been found to amount to 50%, riboflavin again being unaffected. In view of the errors of biological assay, the measure of agreement between the findings obtained by the two methods is regarded as satisfactory. Another piece of research concerns the effect of light on the vitamin C of milk in containers. Visible light is known to have a destructive effect on this vitamin, and experiments have been carried out with bottles of different colours. Brown glass bottles have been found to be most effective from the point of view of preserving the vitamin; green glass bottles come next, and then wax-impregnated cartons. In the cartons twice as much of the vitamin survives as in clear glass bottles. Work has also been done at Reading on the physiology of bovine lactation. Repeated injections of ox anterior pituitary extracts rich respectively in prolactin (pigeon crop-gland stimulating factor) and thyrotrophic hormone into cows in declining lactation have resulted in a marked increase in milk yield, and, with the prolactin

⁷ Harvey Lectures, 1924-5, Series 20, p. 188, Baltimore.

⁸ Bull. Acad. Méd., Paris, 1933, 114, 374.

⁹ Amer. J. Syph. Gon., 1940, 24, 468.

preparation, in a substantial increase in fat content, the average daily milk-fat production being raised by nearly 50%. The milk yield does not continue to increase throughout the period of prolactin treatment, but reaches a steady level and then declines. It is considered that the increase in milk yield and milk-fat content following injections of pituitary extracts cannot be ascribed to the action of a single hormone; probably the secretion of milk-fat is a mechanism distinct from those governing the secretion of other milk constituents. The Hannah Institute has also been occupied with lactation studies, especially the problem of inheritance of persistency of milk yield, or the extent to which ability to maintain a level yield is transmitted by the parent. The experimental results demonstrate the important part played by environment in determining the shape of the lactation curve. It seems likely that a uniform method of bacteriological examination of milk may be adopted for Great Britain. Hitherto in England and Wales the methylene-blue reduction test has been used, and in Scotland the plate count. One reason why the former method has not been adopted in Scotland is that it is said to be less reliable when applied to milk produced and handled in a colder climate. The convenience of the methylene-blue reduction test and its simplicity and cheapness in comparison with the plate count have seemed to justify a more detailed examination of the effect of temperature on its reliability, and so far as the work has gone the temperature factor does not appear to be an insuperable obstacle to the adoption of the reduction method under Scottish climatic conditions.

U.S. HEALTH UNIT AND LIAISON OFFICER

With the consent of the President of Harvard University, Dr. J. E. Gordon, who holds the Charles Wilder Chair of Preventive Medicine and Epidemiology at Harvard, has accepted Mr. Malcolm MacDonald's invitation to act as United States Liaison Officer with the Ministry of Health. Shortly after the outbreak of war Harvard University appointed a committee to consider how the university could contribute material or professional help to a cause closely concerned with its interests. The possible nature of this help was conceived in the broadest terms, with the suggestion that it might be in economics, medicine, sociology, public health, law, and perhaps other fields. Through an exchange of opinion between authorities of Harvard and colleagues in Great Britain it later became evident that help in the fields of public health and medicine was most clearly in point. As a consequence Harvard University made a formal offer to the Minister of Health, which Mr. MacDonald gratefully accepted, to equip and maintain in Great Britain a public health unit for the study and control of communicable disease. The purposes of the unit were defined as: (1) to lend material aid to a friendly nation; (2) to investigate communicable disease under unusual military and civil conditions; (3) to obtain medical information of value to the national defence of America. The unit as originally conceived was to include a group of workers concerned with field studies in epidemiology and a laboratory for the study of associated problems. British authorities early pointed out the desirability of adding to this basic unit a well-equipped hospital for the clinical care and study of communicable disease. This addition became possible through the active co-operation of the American Red Cross, who agreed to build and transport to Great Britain a hospital of 125 beds. The final plans for the unit evolved from discussions between Prof. Gordon and the authorities of the Ministry of Health in London during August and September. Facilities and staff are provided for the study of communicable disease

in the field, in the laboratory, and at the bedside. Prof. Gordon returned to America in the latter part of September to assemble staff, order equipment, and lay plans for the hospital. He left in London Dr. John R. Mote, assistant in epidemiology in the Department of Preventive Medicine, Harvard University, now acting as medical adviser to the American Red Cross Committee in London, to continue and complete local arrangements. Prof. Gordon has now returned here, and the first shipments of buildings and equipment are expected to arrive shortly. The headquarters of the unit will be in south-west England, with provision for a mobile team to serve more widely as need may arise. As U.S. Liaison Officer with the Ministry of Health, Prof. Gordon has an office in the Ministry, and is taken freely into the confidence of the Minister and the staff of the Department.

THE KING'S ENGLISH

The latest protest against defilements of "our maternall Englysshe tongue" comes, not from Mr. A. P. Herbert, but from another member of the House of Commons, Mr. Henry Strauss, who in a recent letter to the *Times* denounces as a neologism the word "hospitalize," importing to send a person to a hospital, or to admit or to maintain someone there. Most of us will thank Mr. Strauss for his protest against a horrible word of very ambiguous meaning; but even so it may perhaps not lack defenders, for it raises the old issue between the precisians, whom their critics call pedantic, and the colloquialists, whom the "highbrows" dub illiterate. Language, say the latter, must grow; must adopt new words for new conceptions; must throw off the shackles of obsolete convention under pain of becoming not a living but a dead tongue. They note that sometimes the slang of one generation becomes accepted usage, even of the scholar, in the next or the next but one; and if their sentences lack a verb here or grammatical structure there, comfort themselves with the reflection that anyhow people know what they mean, which is not invariably true. So many of us fall into slipshod speech ourselves that these excuses often gain acceptance among those who dislike to label themselves self-righteous. For all that, slipshod speech and writing are merely signs of slipshod thought and downright muddle. The danger is especially to be avoided in scientific writings, where the exact meaning of every word and phrase should be crystal clear and incapable of misconstruction; if medicine is to remain a science it must conform to this standard. English is not an easy language, but every shade of meaning can be accurately expressed in it if sufficient trouble is taken. Many of us, for instance, are too prone to "give a case morphine," when it is the patient, not the case, who receives the drug; or to say the patient "has no temperature," meaning no rise of temperature; or to "operate a tracheotomy" (an Americanism which shows signs of acclimatization here) instead of to perform it. "Reconsider" is another word which gives rise to trouble: its proper meaning is to consider anew; but some people now use it as equivalent to altering a previous resolution, from which the awkward dilemma arises (if this latter usage stands) that one can reconsider a decision without reconsidering it. And if any reader should detect a deplorable solecism in the columns of the *Journal*, all the Editor can say in mitigation is that he will reconsider the matter.

The Right Hon. Malcolm MacDonald, M.P., has been chosen to fill the post of High Commissioner in Canada for His Majesty's Government in the United Kingdom, and is succeeded as Minister of Health by Mr. Ernest Brown, lately Secretary of State for Scotland.