

Registrar-General in London for 1903. In dealing with the Jewish deaths, the average of the two years 1903-4 has been taken in order to avoid the error which might arise from the small mortality in one year from some of the causes stated.

One of the first facts that strikes us in examining the above table is the marked difference in mortality from phthisis, this disease, which accounts for nearly 10 per cent. of the total deaths in London, apparently being responsible for only about 6 per cent. of the mortality among Jews. The difference is even more marked if "other tuberculous diseases" are taken into consideration, the total figures being then 13.8 and 7.9 respectively. This would seem to show that the generally-accepted idea that Jews do not suffer from consumption to any great extent is correct. The fact, however, that no less than 22.3 per cent. of the Jewish deaths are ascribed to diseases of the respiratory organs as against only 8.7 per cent. in the case of the general population arouses the suspicion that, among the former, deaths from phthisis are not infrequently described vaguely as from disease of the lungs. Reckoning the total of the Jewish population of London at the problematical figure of 140,000, the death-rate from phthisis and diseases of the respiratory organs together works out at 380 per 100,000 living, while the Registrar-General returns 397 per 100,000 as a death-rate for phthisis, bronchitis, and pneumonia. It must also be remembered that we are only dealing here with not more than 90 per cent. of the Jewish deaths. At the same time it is probable that some part of the marked mortality from chest affections shown in the United Synagogue returns is due to a great prevalence of bronchitis in children, who apparently form so large a proportion of the Jewish population, the deaths under 5 being 56 per cent. of the total, instead of the 41 per cent. we should expect from the Registrar-General's returns. Whether this is due to the proportion of children being greater or to an enhanced mortality among them, or, as is probable, partly to both causes, it would affect the figures in the same way. Unfortunately, the facts at our disposal do not enable us to ascertain how many of the deaths from diseases of the respiratory organs occur among children.

The percentage of Jewish deaths from cancer—2.1 among males, and 2.8 among females—is strikingly small compared with the general percentage of 5.4 and 8.0 respectively. The facts, however, are not quite as remarkable as would appear from these figures, as the Hebrew population contains, as has been noted above, evidently fewer persons of cancer age. The Semitic race appears, nevertheless, to be distinctly less susceptible to this malady, as even when those over 35 years of age are alone considered the difference is sufficiently marked. Cancer was in 1903 the cause of 13 per cent. of the deaths of persons over 35, while among Jews it accounted for only 8 per cent. of the deaths at the same ages.

There is some reason, however, for believing that this smaller susceptibility is confined to the earlier ages, as in the United States it was found that children born of Russian and Polish mothers (mostly Jews) have a very low cancer mortality when all ages are considered, but suffer to a degree well above the average at ages over 45, and for those of 65 and over the rate is the highest shown by any nationality in the Union. If this be true, we should expect the cancer mortality to be low among the London Jews, in view of the unduly large proportion of persons under 60 years of age.

The consideration of these points indicates how complicated is the question, and how difficult it is to avoid being led to an erroneous conclusion.

It will be noted that among Jews the proportion of deaths from diseases of the nervous system is far in excess of that found among the general population, while the reverse is the case with diseases of the heart and vessels. The latter is what was to be expected from the fact that Jews are not accustomed to engage in work which involves violent exertion, and the low mortality from these diseases is probably entirely a question of occupation and not of race. With regard to nervous diseases, it is little to be wondered at that a people who for the most part came to this country as refugees from a land where they and their fathers had suffered from the cruelest persecution of modern times should show an undue susceptibility to nervous disorder. That such is the case is not only shown from the figures before us, but will be borne out by the experience of every one who has practised among these people.

It is more remarkable that so large a proportion of Jewish mortality should be due to diseases of the digestive system. It has so often been asserted that the Jewish method of

slaughter of animals intended for food, and of inspection of carcases, is greatly superior to that in general use, and abstention from pork and shellfish is so universally considered hygienic, that we should have expected that Jews would be exceptionally free from diseases of the chylipoietic viscera. From the facts before us it would appear that, however beneficial the Jewish method of preparation of food may be to the general health, it puts an undue strain upon the digestive organs.

It is much to be regretted that the figures given by the Burial Society of the United Synagogue are so meagre that it is impossible for the statistician to draw from them any but the most general conclusions, and they are almost useless for purposes of comparison if anything like scientific accuracy is to be aimed at. It may be pointed out that an insuperable difficulty in dealing with the figures published by the Society arises from the fact that no account is given of the number of diseases at different ages from various causes, and it may be suggested that those who have the preparation of the report will find no great difficulty in publishing a table similar to the Table IV in the recent report of the medical officer for the borough of Stepney. As the bulk of the Jewish population is to be found in that borough, such a table, if published by the United Synagogue, would be invaluable for comparison with the vital statistics of the general population of Stepney as well as with those given by the Registrar-General.

The material at present at hand is so insufficient that it is not suggested that the few conclusions which it has been possible to arrive at in this paper are of any great value, but they are merely put forward as suggestive of the considerable difference which exists between the Jewish mortality and that of the general population. It will be seen also from what has been said that the question is a very complicated one, and for many reasons it will repay a careful study when the necessary figures are more easily obtainable.

#### REPORT OF THE MEDICAL OFFICER OF THE LOCAL GOVERNMENT BOARD, 1903-4.

THE following is an abstract of some of the more interesting articles which are published in this report:

##### EPIDEMIC DERMATITIS.

Dr. Monckton Copeman investigated an outbreak of epidemic skin disease which occurred at the Central London Sick Asylum, Hendon, in 1903. This disease he found to be similar in general characters to a malady, originally termed "epidemic eczema," which had previously come under observation at various metropolitan infirmaries. The affection presents itself under a plurality of forms, and does not always conform to a strictly eczematous type. In the severer cases there is a considerable rise of temperature, and the cutaneous eruption is associated with marked irritability and itching. Desquamation is a constant feature, and ranges in extent from the mere casting off of powdery scales to the shedding of the entire cuticle over the affected regions. Compared with previous outbreaks, where the constitutional symptoms were frequently severe and the mortality reached as high a figure as 10 per cent., the Hendon disease was decidedly mild in type. Only two deaths occurred, and one of these was largely attributable to other causes. The persons attacked were, with few exceptions, of comparatively advanced age and the subjects of chronic ailments of various kinds. In the course of his inquiries into the causation of the disease, Dr. Copeman found he was justified in excluding the possibility of skin irritation by unsuitable clothing or bedding or from the use of bad soap. Nor was there any evidence that the disease was produced by infection from without or by transmission from case to case. Investigation of the dietary elucidated the fact that there were only three articles of which all the patients partook—namely, bread, butter, and milk. Against the first two of these no evidence was obtained which raised any doubts as to their wholesomeness, but a strong suspicion arose that milk played an important part in the causation of the disease. All the inmates, with a few exceptions, consumed milk, and amongst these exceptional persons no instance of the disease occurred. When Swiss milk was substituted for the ordinary milk supply all the patients suffering from the malady at once began to improve. In previous epidemics of the same disorder suspicion has fallen on the milk, but no very tangible *materies morbi* has been found by either bacteriological or chemical examination. In

the Hendon outbreak, however, a clue was afforded by the observation that the milk remained good for an abnormally long time. Consequently special attention was directed to the detection of preservatives, with the result that in all the milk in question the presence of formalin was established—a substance which dangerously impairs the nutritive value of any article of diet to which it is added. This discovery raises an important question. Owing to its high antiseptic potency, formalin is largely used by milk vendors, the amount ordinarily employed being about 21 mg. per litre. Some indication of the extent to which this preservative is employed is afforded by the statement of Dr. Hake that the sale of formalin to milk vendors in 1894 amounted to 15,000 gallons. In view of the strong suspicion raised by Dr. Copeman that the presence of formalin in milk may have a causal relationship to epidemic dermatitis, it is, as he says, very desirable that in the case of any future outbreak special attention should be paid to the examination of milk for preservatives. If the dangerous influence of formalin should become more definitely established, the further question will arise whether salicylic acid and other commonly-used antiseptics may not also have a deleterious effect upon susceptible individuals.

#### PLAGUE IN 1903.

Dr. Bruce Low has prepared a summary of the progress and diffusion of plague throughout the world during the year 1903. From this we learn that in that year the ravages of plague in India far exceeded those of any previous years in which the disease was epidemic. The cases reported amounted to 1,127,205, and the deaths to 865,747. The general behaviour of the disease was similar to that observed in previous years, the maximum of cases being noted in March and April, and the minimum during the months of June and July. The incidence of the disease was most severe in the Presidency of Bombay, the Punjab, and in the United Provinces of Agra and Oudh. In China plague again became epidemic in Hong Kong during 1903. There were 1,415 recognized cases and 1,252 deaths, giving a case mortality of 88.4 per cent. The disease also assumed epidemic proportions in Canton and the adjoining towns and villages. Australia suffered very slightly from the disease. Two cases were reported in Sydney, 11 in Fremantle, and 22 in Brisbane. Isolated cases also occurred in a few other towns. In Egypt the total number of cases for the year was 303, the deaths amounting to 160. In an official report on the subject, Sir Horace Pinching, Chief of the Egyptian Sanitary Department, says: "It is interesting to note that the period in Egypt when most cases of the disease appear corresponds with the period when rats are breeding. Almost invariably in the houses where cases occur, and in those adjoining, dead and dying rats are found." The returns for Natal give 223 cases for the year, with 163 deaths. The great majority of these, namely, 203 cases with 147 deaths, occurred in Durban. In Cape Colony Port Elizabeth suffered rather severely, 135 cases with 75 deaths being officially notified; 33 cases, of which 17 proved fatal, were reported from King Williamstown, and 32 cases with 20 deaths from East London. In England and Wales there was a considerable diminution in the number of ships arriving at various ports with cases of plague or suspected plague on board. The total number of these suspected ships amounted to only eleven, yielding 12 cases; from none of them was a single plague case landed on English soil.

#### DISINFECTION OF SHIPS BY SO<sub>2</sub>.

Drs. Haldane and Wade publish detailed reports on this subject, with special reference to the use of the "Clayton process." The "Clayton" apparatus consists of an iron furnace specially constructed to burn sulphur. Air is drawn through this by means of a Root's blower, the products of combustion being cooled by passing them through a cooling apparatus below the furnace before they reach the blower. They are driven onwards through a flexible rubber hose which can be introduced into any part of the ship. The gas consists of the residual nitrogen of the air, together with about 15 per cent. of sulphurous acid, and a good deal of sulphuric acid in suspension. All rats and insects in a ship, Drs. Haldane and Wade tell us, would be destroyed in less than two hours by the uniform diffusion of 0.5 per cent. of sulphur dioxide. This condition is easily realized in the case of cabins and empty holds, but, owing to the rapid absorption of sulphur dioxide by most articles of cargo, cannot, as a rule, be realized in a loaded hold. Pathogenic bacteria, such as those of plague and cholera, require a somewhat larger percentage of the gas, but, under the same conditions and with the same

limitations, plague germs would be destroyed in six hours at most by a gas containing 2 per cent. of sulphur dioxide. The typhoid bacillus is considerably more resistant, but would certainly be destroyed in twenty-four hours under these conditions. Anthrax spores were not found to be affected by sulphur dioxide. Most articles of cargo absorb relatively large volumes of sulphur dioxide, but give it up again more or less readily when exposed to air. A bale of wool absorbs at least ten times its volume of the undiluted gas, and a bale of jute about four times its volume, but a bale of cotton probably absorbs none at all. Flour absorbs about four and a half times its volume of undiluted SO<sub>2</sub>, and retains a small fraction of this very tenaciously. Dry textile fabrics and metals are not as a rule affected by SO<sub>2</sub>, but are injured when exposed to the direct action of "Clayton gas," owing to the presence of free sulphuric acid. Covering with paper or a thin coat of whitening is sufficient to shield these goods from this injurious effect. Most dry foodstuffs, especially when in a state of powder, absorb sulphur dioxide, and in many cases retain enough of the gas, in combination as a sulphite, to impair the flavour. The amount thus retained in flour is sufficient to sterilize yeast. Moist food stuffs, such as fruit, vegetables, and meat, are uneatable after exposure to sulphur dioxide.

#### TYPES OF PLAGUE BACILLI.

Dr. Klein has continued his researches on the bacteriology of plague, and adheres to the view which he expressed in last year's report that two strains of bacillus pestis are to be recognized—namely, (1) the virulent "human" type, and (2) the less virulent "rat" type. These types, he maintains, differ from one another in morphological, cultural, and physiological respects, and the differences are of a definite and permanent character. The bacilli of the "human" type are of a more or less cylindrical shape; in gelatine cultures the growth of the colonies is at an early stage conspicuously granular and more or less opaque in aspect; the bacilli are very virulent for the human species, and cultures of the organisms are highly virulent for rodents. The bacilli of the "rat" type, which has presumably passed through several generations in the rat, are less cylindrical than the "human"; they exhibit oval and coccus-like forms, and show a rapid tendency to undergo involution. The growth on gelatine in early phases is of conspicuous translucency and the colonies are less angular than those of the "human" type. Their action on the guinea-pig (and presumably on man) is less virulent, and by transmission in artificial cultures virulence is rapidly lost. Dr. Klein does not think that the "rat" type is merely due to an attenuation of the more virulent organism by continued residence on artificial culture media, because the "human" type retains a considerable degree of virulence through many generations of subcultures for several years, whereas the "rat" type quickly loses its virulence almost completely. Moreover, the "human" type rapidly recovers full virulence by a renewed passage through the animal body whilst the original virulence of the "rat" type, when once lost by artificial culture, cannot be regained by animal passage. Dr. Klein recognizes that these two types of bacilli have in all probability descended from a common stock. He has not, however, succeeded in converting the "rat" into the "human" type, though he has met with more success in his efforts to modify the "human" into the "rat" type. For this latter purpose he employed passage through rats which were antecededly protected by subcutaneous inoculation of Haffkine's prophylactic.

#### THE DIFFERENTIATION OF STREPTOCOCCI.

Dr. Gordon has conducted an elaborate investigation into the differentiation of streptococci by the physiological method. He used as his medium ordinary meat broth, which was freed from sugar by cultivation with *B. coli*. The broth was then sterilized, cleared, made slightly alkaline, and coloured with litmus. As the result of later experience, he now recommends Lemco broth as being preferable to this medium, on the grounds that it is cheaper, more quickly prepared, more uniform in composition, and, being sugar-free, does not require preliminary cultivation with *B. coli*. To the liquid medium a certain organic test substance is added. In the medium so prepared the organism to be investigated is cultivated, and it is ascertained, by observing the colour of the litmus, whether or no the test-substance is decomposed with the formation of acid products. As the result of experiments with a very large number of carbohydrates, glucosides, and alcohols, Dr. Gordon has selected seven test-substances as being of particular value in the differentiation of streptococci.

These are saccharose, lactose, raffinose, inulin, salicin, coniferin, and mannite. In addition to these, tests in litmus milk and neutral red broth are also used. Dr. Gordon submitted 300 examples of salivary streptococci to these nine tests. They all exhibited in common the characteristics of giving a positive reaction to the saccharose test and a negative reaction to the mannite test. In the remaining seven tests, however, they differed so much that they were broken up into forty-eight different types. The same nine tests were applied to streptococci isolated from various cases of disease in the human body, and here again much variety was found; the twenty different specimens examined falling into no less than ten separate types. Examination of thirteen streptococci isolated from various septic and septicaemic processes yielded six different types. The commonest were those giving positive reactions to saccharose and lactose alone, or positive to these two substances and also to salicin. Three types, however, gave a positive reaction to mannite. On the other hand, none of these septic streptococci gave a positive reaction with raffinose or with neutral red, and five out of the six failed to attack coniferin or to clot milk.

As contrasted with these streptococci of sepsis, interesting differences were obtained with streptococci of ulcerative endocarditis. Five streptococci, isolated from cases of ulcerative endocarditis, were differentiated into four types. All of these clotted milk, and three of them were positive to raffinose and to neutral red. They were all negative to mannites. Comparing the streptococci found in normal human saliva with those isolated from the human body in disease, Dr. Gordon finds that two of his streptococci isolated from patients suffering from ulcerative endocarditis gave reactions identical with the two types found to occur with the greatest frequency in normal saliva. The virulent streptococcus which occurred with greatest frequency in septic processes was fourth in order of frequency amongst the salivary streptococci, and this same organism, together with the organism which is first in order of frequency amongst salivary streptococci, was isolated from a sample of pneumonic sputum. These observations are obviously of interest from the standpoint of clinical pathology. Dr. Gordon also records some interesting preliminary observations on the application of the same method for the differentiation of staphylococci.

#### THE INFLUENCE OF SYMBIOSIS ON BACTERIAL VIRULENCE.

There are good clinical and epidemiological grounds for believing that the virulence of organisms which produce certain specific diseases may be enhanced by the simultaneous presence in the body and the symbiotic action of some other micro-organism. Thus the severity of an attack of diphtheria, tuberculosis, or scarlatina may be increased owing to the simultaneous presence of the streptococcus pyogenes, and similarly it is thought that infection with typhoid or cholera organisms may more readily take place or occur in a severer form if some variety of coli bacillus which is capable of producing gastro-enteritis happens to be ingested along with the specific organism. Dr. Klein has been endeavouring to throw further light on this subject by making experiments designed to provide an answer to the following question: "Granted an originally pathogenic microbe which again and again, when inoculated into an animal, does not for one reason or another exert its pathogenic effect, is it possible to render such animal susceptible to that microbe by fostering the latter within the animal under symbiotic conditions, that is, in company with another microbe of one or another kind?" The specific organisms which he employed were attenuated typhoid cultures, attenuated cholera cultures, and diphtheria bacilli taken from dry agar cultures, all of which organisms were known to produce little or no effect when inoculated intraperitoneally into guinea-pigs. Other organisms were inoculated concurrently with these, and as the result of his experiments Dr. Klein found that a real enhancing influence was exerted on the *B. typhosus*, and to a less extent on the *vibrio cholerae*, by the following organisms: A strain of *B. coli* obtained from ice-cream, the bacillus of Gaertner, and particularly the anaerobic organisms *B. (enteritidis) sporogenes* and *B. carnis*. A similar increase of virulence was obtained for *B. diphtheriae* by placing it under symbiotic conditions with streptococcus pyogenes. These very interesting results were obtained by inoculations into the peritoneal cavity. Further observations, as Dr. Klein points out, are required concerning the symbiotic influence of pathogenic microbes, and also of microbes usually considered non-pathogenic, when they are introduced into

the body by the alimentary canal and by the respiratory tract, the two usual portals of entry in human infection.

#### CHARACTERS OF PROTEUS TOXIN.

Dr. Sidney Martin has continued his researches on this subject. He finds that, besides the toxic effect of the proteus toxin, which was fully described in his last report, the toxic reaction is mainly shown in the development of an agglutinin in the blood. This agglutinin is formed fairly rapidly and in comparatively large quantities. The toxin of proteus vulgaris therefore behaves, in this respect, like the toxins of the coli and typhoid groups of organisms. No very clear indication was obtained of any large formation of antitoxin by the injection of the proteus toxin into rabbits.

#### CHLOROFORMED CALF VACCINE.

Further observations and improvements on the chloroform process of preparing vaccine lymph are recorded by Dr. Alan Green. The optimum temperature for the preparation of the material appears to be about 20° C. The following bacteria, in addition to those mentioned in previous reports, are killed by the chloroform process at 20° C. in from three to eight hours: *Streptococcus pyogenes*, *B. proteus vulgaris*, *B. prodigiosus*, *B. pyocyaneus*, *B. fluorescens liquefaciens*, *B. typhosus*, *B. coli communis*, *B. diphtheriae*, *B. mallei*, *B. tuberculosis*, *Spirillum cholerae asiatica*, and *Micrococcus melitensis*. The issue of chloroformed vaccine for general vaccination purposes has been attended with excellent results: 65,735 vaccinations have been performed with material issued after an average interval of seventeen days since its collection from the calf; they yielded a total case success of 98.6 per cent., and an insertion success of 94 per cent.

## THE INTERNATIONAL CONGRESS OF SURGERY, BRUSSELS.

[FROM OUR CORRESPONDENTS.]

THERE has long been need of a Society of Surgery which should embrace all nationalities. It is much to be cognizant of the literary work of surgeons practising in countries other than one's own; it is more, far more, to know something of their personality, to learn at first hand their views upon questions of present interest, and to have an opportunity of seeing their operative work. The establishment of an international society could afford one these opportunities and advantages.

The recent formation of the Société Internationale de Chirurgie is a matter upon which all surgeons are to be congratulated. The inaugural meeting of this Society is being held in Brussels from September 18th to September 23rd, under auspices of the most favourable kind. Over 650 surgeons have already been elected to the Society, of whom one third are present at this its first triennial Congress. This number is made up of the following nationalities, taken in the order they were submitted to a meeting of the International Committee, at which nearly all the twenty-three delegates from the same number of countries were present: Finland, 7; Great Britain, 40; Turkey, 4; Switzerland, 28; Sweden, 14; Germany, 150; the United States of America, 55; Austria, 40; Belgium, 50; Canada, 11; Denmark, 7; Egypt, 12; France, 100; Spain, 7; Greece, 9; Holland, 32; Hungary, 16; Italy, 17; Norway, 11; Portugal, 10; Roumania, 14; Russia, 20; Servia, 6.

Professor Theodor Kocher was elected the first President of the Society, and his installation was recognized and acclaimed by surgeons of all nationalities as the best possible choice. With the single exception of Lister there is, as we all recognize, no surgeon of the present generation who has done so much for surgery as Kocher. His work on hernia, upon the stomach and intestines, upon the diseases of the tongue, upon the diseases of the genito-urinary system, his recent colossal work upon compression of the brain, his work on the diseases and injuries of the spinal cord, his recent achievement—the performance of 3,000 operations upon the thyroid gland, each one of these sufficient in itself to make the reputation of a surgeon—are all incidents in the gigantic contribution which it has been his privilege to make towards the science and the art of surgery. No other selection than his for the office of President was possible, and it is a matter of remark among the surgeons present at the Congress that his acceptance of this high honour affords the happiest augury for the present and future success of the Society.

The inaugural meeting of the Society was held on Septem-