

and to be called the Desert Corps instead of the Desert Column, General Chauvel retaining command. It was now, however, to consist of three divisions each of three brigades. The new divisions were to be known as the Anzac, the Australian, and the Yeomanry Divisions. In the change I remained with General Chetwode and became D.D.M.S. of the 20th Corps, and my A.D.M.S., Major Lelean, stayed with me as D.A.D.M.S. The Corps was to consist of the 53rd, 60th and 74th Divisions, and the 10th Division (Irish) when it should arrive from Salonica.

A large camp was prepared for General Headquarters at Kelab on some open ground near the railway between Rafa and Khan Yunus.

The D.M.S., General Maher, did not at first come up to Kelab with the rest of the G.H.Q. staff, but sent his A.D.M.S., Colonel Keble, to represent him.

East Force did not become extinct until August 12. At this time the 53rd Division was in the trenches on the coastal section and the 60th was attached to Desert Column, so that when the 21st Corps took over responsibility for the maintenance of the lines opposite Gaza the 74th Division was the only one of our divisions which for the moment was under our control, and as they were going through a special course of training our immediate responsibilities were very light.

Twenty-first Corps Headquarters moved into our terraced quarters on the beach and we formed a temporary camp in Deir el Belah near where we had been before, until a new camp which was being prepared for us at Fukhari, on the Rafa-Shellal railway, was ready. After the strenuous work of East Force our duties were very light, and the opportunity was seized by most of us for taking a short holiday. My own, the first since our landing in April, 1915, was spent in Cairo, where, after the manner of the traditional busman, I took the opportunity of seeing something of the work in the base hospitals.

*(To be continued.)*

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## Current Literature.

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**The Influence of Diet on Caries in Children's Teeth.** Medical Research Council. Spec. Rep. Series, No. 211. H.M. Stationery Office, 1936. Pp. 137. Price 2s.

The results obtained during the first stages of the investigations described in this report were published in an interim report issued by the Medical Research Council in 1931 (Spec. Rep. Series, No. 159). The report under review gives a complete description of the investigations, the methods employed and the detailed results.

The object of the investigations being to determine to what extent it was possible to control the initiation and spread of caries by dietetic measures

during the period of development and after the eruption of the teeth, the main line of the experiments consisted of adding various substances to the basal diets of children between the ages of 5 and 14 years living in three institutions in Birmingham, the amounts of the added substances varying with the ages of the recipients (Investigation I). These additional substances were treacle in one institution, olive oil to which a small quantity of iodine was added in another and cod-liver oil in the third.

Six months after the investigations began it was found possible to subdivide the children in the largest of these communities into two groups, one of which was given olive oil and the other olive oil to which vitamin D in the form of irradiated ergosterol was added (Investigation II).

Children in the institutions between the ages of 2 and 5 years and some twenty-seven under 2 years in a nursery home were also given the diet additions, those in the nursing home being given irradiated ergosterol. The observations on this special age-group are recorded as Investigation III.

The total number of children dealt with in the three institutions was about 1,600, but of these only a small proportion were under observation for the whole period of three years. Each child was given a thorough examination at the beginning of the test period and thereafter at six-monthly intervals until the end, special attention being paid to the surface structure of the teeth, their arrangement in the jaws, the number of teeth carious and the extent of the caries in each, the condition of the gums and lastly the general physical condition, particularly with regard to the bones.

No definite evidence was obtained from the observations on the effects of diet on the structure of the permanent teeth, but Investigation III gave indications that the addition of vitamin D to the diet during the period of development improves the structure of the first permanent molars.

On the other hand, very definite evidence has been found that when an increased vitamin D supply is given before the full eruption of the teeth, there is a very significant decrease in the incidence of caries after eruption.

The beneficial effect of increased vitamin D given after full eruption of the teeth was not clearly evident as a result of Investigation I, but in Investigation II it was quite definite, and the conclusion can be arrived at that the best results are obtained with the permanent teeth when the increased vitamin is given during the pre-eruptive period.

In considering the data collected for the deciduous teeth, it is pointed out that the average ages of the children at the beginning of Investigations I and II were  $9\frac{1}{2}$  and 10 years respectively, so that in many cases absorption of the roots would be taking place and the circulation in the pulp would be disturbed, therefore any direct nutritional effect would appear to be less likely to occur. Nevertheless, it was found that there was less initiation and spread of caries in the cod-liver oil group than in the treacle group, although there appeared to be little or no difference between the cod-liver oil and olive-oil groups.

In Investigation III there were so few children in the olive-oil group that comparisons are impossible, but as regards the other two groups there is definite evidence that caries was less progressive in the cod-liver oil group than among those being given treacle.

In view of the belief still held in some quarters that caries begins in a tooth because certain bacteria produce acids by fermenting carbohydrates adhering to the enamel, a comparison of the onset and spread of caries in the treacle and olive-oil groups is of interest. So far as the original permanent teeth of each group are concerned, the incidence of fresh caries was the same, but the spread was significantly greater in the olive-oil group in which there was also apparent a more marked degree of softening of the carious areas. In the newly-erupted teeth the incidence and extent of the caries were found to be distinctly less in the olive-oil group. The conclusions to be drawn from this phase of the investigations may, however, be obscured because the facts only became apparent in the last six months of the observation period, and during this time the olive-oil group showed a greater number of fully-erupted teeth. In addition, the small amount of iodine given with the olive oil may also have had some unknown effect on the final picture. In any case, the investigators are of opinion that a more completely controlled investigation will be necessary before the relative effects of treacle and olive oil can be correctly assessed.

The effects of the diet additions on the general physical condition of the recipients are for various reasons not so definite as those on the dental tissues, but it is noted that signs of healed or active rickets have been reduced to a greater extent in those receiving cod-liver oil than in the control groups.

It is also noted that no evidence was obtained that the addition of cod-liver oil for three years (Investigation I), or vitamin D in the form of irradiated ergosterol for two and a half years (Investigation II), had had any effect in promoting greater increases in height and weight. Cod-liver oil did, however, cause a definite reduction in the incidence of catarrhal conditions in colds.

The final conclusions reached are that a relatively high vitamin D content of the food can do much to diminish the incidence of caries if the vitamin is given during the development of the teeth; that a beneficial effect may be obtained if the vitamin is given at a fairly late stage of development; and that even when it is given after the eruption of the teeth the onset and spread of caries are delayed.

PETTIT, H., MUDD, S. & PEPPER, D. S. *The Philadelphia and Alaska Strains of Influenza Virus. Epidemic Influenza in Alaska, 1935.* *J. Amer. M. Ass.* 1936, v. 106, 890-92, 1 map. [13 refs.]

Influenza appeared in South-eastern Alaska in the autumn of 1934 and worked its way westward and northward throughout the winter. It seems probable that the epidemic was imported from the United States, *via*

Seattle. Virus was obtained from several of the cases and has been examined by Francis [*Bulletin of Hygiene*, 1936, v. 11, 150], who found it to be immunologically identical with the viruses obtained from cases in Philadelphia and Porto Rico. These viruses, in their turn, have been shown to be immunologically identical with the strains of virus originally isolated in England by Laidlaw, Andrewes and Smith [*Bulletin of Hygiene*, 1936, v. 11, 329]; and a strain of virus isolated by Burnet in Australia has been found to be identical with the English strain [*Bulletin of Hygiene*, 1936, v. 11, 330]. It would seem, therefore, that the virus that has been responsible for outbreaks of influenza during recent years, in widely separated parts of the world, is an immunological entity; and this is encouraging from the point of view of ultimate control.

W. W. C. TOPLEY.

Reprinted from "*Bulletin of Hygiene*," Vol. 11, No. 8.

HEUKELEKIAN, H. & SCHULHOFF, H. B. **Studies on the Survival of *B. typhosus* in Surface Waters and Sewage.** *Bull. N. J. Agric. Exp. Sta.* No. 589. 1935, 32 pp. [Summary taken from *Dept. Scient. & Indust. Res. Water Pollution Research. Summary of Current Literature*. 1936, v. 9, 123.]

A study was made of the survival of *B. typhosus* in different artificially infected substrates, its presence in sewage and its survival in sewage treatment processes. Brilliant green agar was used for determining the numbers of *B. typhosus*. It was found that the rate of decrease of *B. typhosus* in polluted water and sewage was rapid. The rate of decrease was greater at temperatures of 22° C. and 37° C., than at 2° C. With favourable temperatures and in the presence of a food supply an actual increase may occur. This increase does not necessarily result in an increase in the survival time as the rate of decrease after the multiplication stage is greater. *B. typhosus* survives for shorter time in polluted than in unpolluted waters probably because of competition for food from other bacteria and attack by protozoa. The survival time is reduced by aeration. The survival time of *B. coli* is unaffected by the presence of *B. typhosus*. In the presence of a food supply the survival time of *B. typhosus* is reduced by introduction of *B. coli*. When normal domestic sewage is sterilized by heat and infected by *B. typhosus* there is a rapid initial increase which does not take place in the presence of certain industrial wastes. There is a rapid reduction in the number of *B. typhosus* during sludge digestion. In activated sludge-sewage mixtures there is an initial increase followed by a rapid decrease. When artificially infected sewage is partially chlorinated the rate of destruction of *B. typhosus* is of the same order as that of normal sewage flora. When 25 per cent of the chlorine demand is satisfied over 99 per cent of the *B. typhosus* are destroyed in ten minutes contact time.

Reprinted from "*Bulletin of Hygiene*," Vol. 11, No. 8.

FRANCIS, T., Jr. & MAGILL, T. P. The Incidence of Neutralizing Antibodies for Human Influenza Virus in the Serum of Human Individuals of Different Ages. *J. Exper. Med.* 1936, v. 63, 655-68, 2 charts. [11 refs.]

The authors have tested 136 human sera for their power to protect mice against a strain of human influenza virus. The number of sera coming from any one age group was relatively small but the results indicated that neutralizing antibodies were present in a very high proportion of sera at all ages except during the period between the end of the first month of life and the end of the first year. There was a suggestion that the proportion of protective sera increased slightly from the first year onward, at least until the 40th year; but the numbers were too small to be more than suggestive in regard to this point. The sera of all of eleven newborn infants contained protective antibodies. The noteworthy fact, in relation to the results recorded by Shope in the following paper, is the presence of neutralizing antibodies in the majority of sera obtained from children in the age group 1-10, indicating that natural immunization against the human influenza virus has been occurring freely during the past ten years.

W. W. C. TOPLEY.

Reprinted from "*Bulletin of Hygiene*," Vol. 11, No. 8.

SHOPE, R. E. The Incidence of Neutralizing Antibodies for Swine Influenza Virus in the Sera of Human Beings of Different Ages. *J. Exper. Med.* 1936, v. 63, 669-84, 2 figs. [18 refs.]

The author has examined 124 of the 136 sera tested by Francis and Magill (*supra*), and has determined their neutralizing power for swine influenza virus. As in the tests with the human influenza virus, the great majority of sera from adults, or from newborn infants, contained neutralizing antibodies; but a sharp contrast was found in the behaviour of sera from children under 12. Very few of these had any significant protective effect against the swine influenza virus; and it would appear that antibodies to this virus have not been freely acquired by human subjects during recent years. These results are in accord with the small series of tests recorded in England by Andrewes, Laidlaw and Smith [*Bulletin of Hygiene*, 1936, v. 11, 329], and support the view, tentatively advanced by Laidlaw [*Bulletin of Hygiene*, 1935, v. 10, 537], that the swine influenza virus may represent the type of virus that caused the human pandemic of 1918-1919.

W. W. C. TOPLEY.

Reprinted from "*Bulletin of Hygiene*," Vol. 11, No. 8.

F. FAIRLEY, E. C. LINTON and A. H. FORD-MOORE. Note on the Toxicity to Animals of some Oxidation Products of 1:4 Dioxan. *Journ. Hygiene*, xxxvi, 3, 341; August 6, 1936.

This paper continues an earlier study by the same workers on the toxicity to animals of 1:4 dioxan (*Journ. Hygiene*, xxxiv, 486).

The authors show that the oxidation products, *in vitro*, of 1:4 dioxan

are diglycollic and oxalic acids, and they report some experiments, carried out at Porton, in which sodium oxalate and sodium diglycollate were given intravenously to rabbits, and ethyl oxalate applied to the skin of rabbits and guinea-pigs. The resulting lesions were comparable with those produced by 1:4 dioxan, and the authors suggest that the toxicity of the latter compound may be due to its oxidation to oxalates and diglycollates in the tissues.

#### Henry Lester Institute of Medical Research.—Annual Report, 1935.

The Henry Lester Institute of Medical Research, which has its headquarters in Shanghai, consists of a Clinical Division, a Division of Physiological Sciences, and a Division of Pathological Sciences. The work of these divisions is, where necessary, correlated by a Central Directorate and assisted by a special Statistical Department. This latter department also undertakes independent investigations. A Department of Scientific Photography is being developed.

The Clinical Division has devoted its attentions largely to infant nutrition and deficiency diseases, particularly the beri-beri syndrome and the chemical changes in the blood, urine and cerebrospinal fluid which occur in this condition. The accumulation of carbonyl compounds—particularly pyruvic acid—is believed to provide a test for detecting early cases of vitamin B<sub>1</sub> deficiency.

The Division of Physiological Sciences has continued its study of nutrition by investigating and analysing various Chinese diets. Experiments of a promising nature were made with soybean egg powder as a substitute for milk in infant dietary.

In the Division of Pathological Sciences many interesting questions have been investigated.

Experiments were made with the much discussed "B.C.G." strain of the tubercle bacillus. A proportion of the experimental animals on which it was tested developed tubercular lesions, and it is concluded that "B.C.G. is certainly not permanently avirulent and it would be highly inexpedient to advocate its use for human prophylaxis at the present juncture."

Bacterial flagella were studied by culturing the organisms in a medium rendered viscous by gum acacia. The movements of the flagella were retarded and could be observed by dark-ground illumination.

"O" agglutination tests gave 100 per cent positive results in cases of bacteriologically proved typhoid fever. "H" agglutination gave 90 per cent positives in the same cases. In seventy cases of "clinical" typhoid fever in which typhoid bacilli could not be found in blood, urine, or fæces, fifty-seven gave neither "H" nor "O" agglutination. The remaining thirteen cases gave "H" but not "O" agglutination. The patients were of course uninoculated, and these results form an interesting contrast to those obtained in our inoculated Army patients, where the picture is by no means so clear cut.

Twenty-four cases of typhoid fever were treated with serum prepared from virulent "O" resistant strains of *B. typhosus*. The results are said to be encouraging.

Numerous interesting observations on helminthology and entomology are made.

These are but a few of the many items of interest in this Report, which obviously emanates from a keen Institute working in surroundings where subjects for investigation are many and varied.

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## Reviews.

EMERGENCY SURGERY. Second Edition. By Hamilton Bailey, F.R.C.S. Bristol: John Wright and Sons, Ltd. 1936. Pp. x + 842. Price 50s. net.

This very useful book now appears in one volume, and the new edition seems likely to increase the good reputation which the work secured on its first appearance. The letterpress and illustrations are of high quality. Some sections have been entirely rewritten, and the whole volume now presents in first-class form a very complete account of emergency surgery.

The systematic arrangement of the chapters is excellent, and it is easy to refer to the commoner emergencies of any particular region of the body.

The chapters on intestinal obstruction, strangulated hernia, and the kidney, bladder and urethra are particularly good. The treatment of injuries to the spine is thoroughly up to date. There is also an excellent account of the important subject of injuries and infections of the hand.

The book certainly fulfills its object of being a guide to the comparatively isolated surgeon who is called upon to treat a patient stricken with an urgent surgical condition. It will therefore make a special appeal to surgeons in the Services, to whom it can be confidently recommended.

B. B.

THE MEDICAL ANNUAL, 1936. Editors: H. Letheby Tidy, M.A., M.D. Oxon., F.R.C.P.; and A. Rendle Short, M.D., B.S., D.Sc., F.R.C.S. Bristol: John Wright and Sons, Ltd. London: Simpkin Marshall, Ltd. Pp. xcv + 624. Price 20s. net.

*The Medical Annual* of 1936 maintains its usual high standard in presenting a record of the new and important works of the preceding year.

Sir Walter Langdon-Brown contributes various articles, including one on the cortical hormone and Addison's disease. Mr. Rendle Short writes on the surgery of the adrenal gland and various abdominal conditions.

Sir Leonard Rogers reviews the literature on tropical diseases, including amœbiasis and its treatment with carbarson, ankylostomiasis and the effect of tetra-chlorethylene alone or combined with oil of chenopodium.