
This investigation is divided into two phases: first, a study of the toxicity or disease-producing properties of Bacterium pullorum when administered orally; and, second, an investigation of the heat tolerance of this organism in infected eggs when prepared for the table by the usual processes of cooking. It was found that eggs which harbor Bacterium pullorum in the yolk in large numbers may produce abnormal conditions, when fed, not only in young chicks, but in adult fowls, young rabbits, guinea pigs and kittens. Many market eggs are infected with this organism and since such methods of cooking as soft boiling, coddling and frying on one side only do not render the yolks free from viable bacteria, the feeding of eggs thus prepared may be the cause of serious disturbances in persons who are particularly susceptible to such influences, and especially in infants. Inasmuch as the wide distribution of ovarian infection in the domestic fowl has come about only in the last few years, its possible danger to man is one of recent development.—B. W.

BACTERIOLOGY OF THE MOUTH


A general discussion of this protozoan, its historical significance, geographical distribution, morphological features, relation to Endamoeba hystolytica, and its pathogenic rôle. The author concludes that "it is more than doubtful that Endamoeba gingivalis is the cause of pyorrhea alveolaris and that it is yet too early to make positive statements regarding the relation of this parasite to disease."—P. B. H.


In a comprehensive discussion of pyorrhea alveolaris or Rigg's disease, the author calls attention to the prevalence of the condition, and its importance as an etiological factor in many systemic diseases. Microorganisms, either of virulent types or those ordinarily saprophytic in the mouth, may invade the living tissues and cause the infection. 455
BACTERIOLOGY OF SOILS


Varying degrees of susceptibility between varieties of the soy beans to inoculation regarding the production of nodules were investigated. Nineteen varieties of soy beans were taken and inoculated with 1 cc. of a broth culture of the soy bean organism. From the results obtained, the author draws the conclusion that a soy bean culture isolated from a single strain of soy beans will be successful in inoculating any of the varieties studied.—A. I.


The writer refers to the paper presented to the Royal Society in 1906 by himself and Barlow on "The Nodule Organism of Leguminosae—its Isolation, Cultivation, Identification and Commercial Application." He reviews the commercial application of the methods then described, and notes that several firms in the United States have manufactured and distributed nitro-cultures according to these methods. The Ontario Agricultural College and the Macdonald College, Quebec, have sent out some 32,000 cultures with very favorable results, particularly with Alfalfa and Red Clover. Further experiments with media are reported, and the following revised medium which has been used successfully for the past two years is recommended.

Three solutions are prepared:
A. 75 grams of agar are dissolved in 3000 cc. of water, by placing in the autoclave at 10–15 pounds pressure.
B. 25 grams of hard wood ashes are boiled in 1000 cc. of water and filtered.
C. 0.5 gram of acid potassium phosphate, 0.5 gram of magnesium sulphate, 0.5 gram sodium chloride, 0.25 gram calcium sulphate, 6.25
grams of calcium carbonate are dissolved in the order named in 1000 cc. of hot water (about 80°C).

The three solutions, A, B and C are mixed and 87.5 grams saccharose and 12.5 grams of mannite are added. The resulting 5 litres of medium are filled into ounce and a half wide mouth Blake bottles, plugged with cotton. These bottles when filled are sterilised in the autoclave at a pressure not exceeding 10 pounds. On removal, the bottles are sloped, and inoculated by means of a pipette. About 2 cc. of a suspension of the desired organism is run into each bottle. The bottles are kept in a sloped position, and incubated at 25°C. for about a week, when they are ready for distribution.—W. S.

BACTERIOLOGY OF WATER AND SEWAGE


The temperature of the liquid affects the action in winter. The turbidity removal is an index of degree of treatment, and with the relative stability test aids in control.—L. P.


In winter with a sewage averaging 10.5°C. (minimum 4.5°C.) the oxidation was retarded. Two and one-fourth cubic feet air per gallon removed 90 per cent of bacteria and reduced the suspended matter to 15 parts per million. The sludge contained 5 per cent N as NH₃ and could be readily pressed. Analytical details are given.—L. P.


The use of SO₂ or H₂SO₄ on Boston sewage disinfects the liquid and precipitates most of the grease with the greater part of the suspended matter. Experiments showed a recovery of 1738 pounds dry sludge per million gallons containing 21.7 per cent grease. The estimates show an apparent profit of $6 per million gallons. Further investigation is recommended.—L. P.


After 5 years trial, liquid Cl plants are to be installed on all intake lines. With less danger of tastes and odors, liquid Cl is cheaper, more flexible and capable of more precise control and reliability than other disinfectants.—L. P.


From 0.2 to 3.0 parts per million of available Cl have been used in hypochlorite plants and 0.25 to 0.67 in liquid Cl plants. Fewer
complaints have been noted with liquid Cl. With intelligent operation the plants afford a cheap method of treatment for supplies not requiring filtration, and cause a marked decrease in typhoid.—L. P.


One part per 12,000,000 parts of water was found to be adequate to eliminate Spirogyra, Cyclotella and most Cyanophyceae. One part per 10,000,000 remained effective for five weeks after which time treatment was repeated. Charts accompany the paper.—F. W. T.


Letton discusses mechanical features of the subject together with various methods for treatment of such water. Bacteriological analyses were made according to the method promulgated by the Secretary of the Treasury (Public Health Reports, November 6, 1914, p. 2960). From these bacterial examinations Letton considers it an impossibility to obtain a drinking water for boats directly from the lakes that will at all times conform to the Treasury Department standard.—F. W. T.


Ammonium hypochlorite proved to have a very rapid action, 20 to 30 times as rapid as CaOCl₂. The ammonium salt is not absorbed readily, preventing after-growths. The use of ammonia (aqua 16°B.) with CaOCl₂ may be economical when the CaOCl₂ costs over $2.08 per 100 pounds. Difficulties in application require quick mixing with large dilution after ammonia is added to bleach solution to avoid loss.

L. P.


Among other subjects Race discusses the questions of aftergrowths and types of B. coli which survive chlorination. Much difference of opinion exists with regard to the question of aftergrowths. The after-growths, under usual working conditions, vary according to the dosage of chlorine employed. A small amount of chlorine exerts a selective action. With large amounts a flora of spore formers survives which is unlike the original flora of the water. A study to determine whether the B. coli found after chlorine treatment were more resistant, indicated that there was little difference in the resistance of various types to chlorine.—F. W. T.


Six hundred pure cultures were isolated from aesculin bile-salt-agar, and lactose litmus agar plates made during analyses of 1000 milk sam-
samples from dealers or farmers in the Province of Quebec. These cultures were used to test the reliability of aesculin bile-salt-agar for the identification of the colon-aerogenes group. Of the 600 colonies many were selected because they seemed to be slightly atypical. There were only 10 exceptions; a percentage of 1.5 of all colonies tested; and a percentage of 0.03 of the colonies on the plates from which the 600 were isolated. Seventeen of the sub-cultures were subjected to the usual classification tests, and the results together with information as to the source of the milk are given in tabular form. Drawings showing the appearance on aesculin bile-salt-agar plates of surface and deep colonies respectively are included on plates I-IV.—W. S.

**DISINFECTION**


The aim of the present work was to ascertain whether there exists a specific hydrogen-ion concentration for the precipitation of all strains of *B. typhi*. None was found; the effective range of hydrogen-ion concentration was wide, most strains being precipitated in the presence of a 3.6 by $10^4$ hydrogen-ion concentration derived from the dissociation of acetic acid in the presence of sodium acetate.—P. B. H.


The object of this investigation was to see whether mold spores could resist the heat applied in pasteurization. Several species of Aspergillus and Mucor, and a large number of species of Penicillium together with a few other kinds of molds were tested. It was found that nearly all the mold spores were killed either by the holder process (30 minutes at 63°C) or by the flash process (30 seconds at 74° or 80°C). The flash process at 74°C. proved the most efficient, only occasional spores surviving.

The effect of dry heat was also investigated. Dried preparations of the spores were submitted to various degrees of temperature. The resistance to dry heat was found to be much greater than to moist heat, considerable numbers of the spores surviving unless temperatures of 120°C. (for 30 seconds) were used.—H. J. C.


This contribution attempts to apply physico-chemical methods to the problem of the mechanism of disinfection; and in the first place to demonstrate the rôles which undissociated acids, hydrogen ions and anions play in the process. The first test was made with formic acid, using *B. typhi* as the test organism. The results seemed to justify the following conclusions: that acids act as disinfectants through the agency of the hydrogen ions, and that the disinfecting power is proportional
to the H ion concentration. The addition of a salt possessing a common anion diminishes the power through decrease in the H ion concentration and increase in the concentration of the undissociated acid molecules. Salts which do not appreciably affect the dissociation of an acid greatly increase the disinfecting properties. In acid disinfection acid anions are positive catalysts and undissociated acid molecules are negative catalysts.—P. B. H.


Introductory to subsequent papers. A discussion of the factors to be considered in formulating a program for systematic studies in chemotherapy.


By the addition of substituted benzyl halides to hexamethylene-tetramine, a series of quaternary salts of this base was obtained. These salts represent a new group of organic bactericides. The results obtained in the tests with these substances upon *Bacillus typhi* have demonstrated the existence of direct relationships between chemical constitution and bactericidal action within the series. The bactericidal character is directly attributable to the presence of the hexamethylene-tetramine nucleus. The degree of the bactericidal action, however, is determined by the position, character, and number of the groups substituted in the benzene nucleus. By the introduction of the methyl, chlorine, bromine, iodine, cyano, and nitro groups into the benzene nucleus of the parent benzyl hexamethylene-tetraminium salt, the bactericidal power of this compound was notably enhanced. The substitution of these groups in the *ortho* position almost invariably resulted in substances which were more active than their *meta* or *para* isomers. The introduction of the methoxy group was without marked effect. Several substances in which two hexamethylene-tetraminium side-chains occurred were found to be the most active of the substances of this series when tested against *Bacillus typhi*. Comparative tests with other bacterial types demonstrated that these compounds possessed a marked degree of specificity for *Bacillus typhi*.


The extension of the study of the quarternary salts of hexamethylene-tetramine to those obtained by the addition of this base to the most
varied types of substances containing aliphatically bound halogen has demonstrated that the introduction of the hexamethylenetetramine nucleus in this manner results in the production of bactericidal substances or enhances the bactericidal action if already present.

In particular it was found possible by the use of the halogenacetyl group, XCH₂CO, as a connecting link, to furnish primary and secondary aliphatic and aromatic amines, alcohols, and hydrocarbons of the most varied character with the hexamethylenetetramine molecule and to study the relation between chemical constitution and bactericidal action in the series of substances so prepared. Because of the variety of chemical types studied, the results are too involved for a detailed summary here. Many of the substances were found to be very powerful bactericides, and in a number of instances derivatives of purely aliphatic nature were found to possess an unusual bactericidal power. *Bacillus typhi*, streptococci, meningococci, and gonococci were the microorganisms used for the tests, and striking instances of partial specificity were observed. This specificity was found to favor not one species alone, but instances were found in which each of the types of bacilli was shown to be especially susceptible to one or another of the particular types of compound employed. The source of this partial specificity is to be sought not in the hexamethylenetetramine nucleus itself but in the molecule to which it is attached. The action of some of the substances was tested in the presence of serum or protein and was found to be not at all or only slightly inhibited. In other cases marked inhibition occurred. The factors controlling the serum—or protein—compatibility of these substances are likewise to be sought in that portion of the molecule other than the hexamethylenetetramine.

B. W.

IMMUNOLOGY


The Canadian Pacific Railway has used inoculation with success, reducing cases in two years to 3, as compared with 290 for two years among non-inoculated.—L. P.


Eleven patients, who had received horse serum for therapeutic purposes, were studied by two methods. Skin sensitiveness to horse serum was tested by intracutaneous injections of 0.02 cc. of horse serum, both undiluted and dilute ten or one hundred times with salt solution. Second, anaphylactic antibody was tested for by injecting the serum of the patient into guinea pigs and testing these for passive sensitization. The results show that anaphylactic antibodies for horse serum appear in the blood serum in maximum concentration towards the close of serum sickness and suggest that their presence determines recovery from this disease.—W. J. M.

Two strains of green-forming streptococci were used. Rabbits were injected with sensitized vaccines and compared with other rabbits injected with unsensitized vaccines. In the latter group of animals there was strong formation of antibodies in from twelve to sixteen days. The animals injected with sensitized vaccines, on the other hand, showed only weak agglutinins or complement-fixing bodies and the serum was without protective value for mice.—W. J. M.


The authors call attention to the indefinite bacteriology of acne vulgaris and the probable etiological rôle of colon bacilli in this disease. They attempted a study of the relationship to the disease of the bacillus of acne, the cocci from acne lesions and of B. communis and B. communior from the feces of persons suffering with this disease, by means of complement fixation tests using the same antigens with the sera of normal persons and persons suffering with non-acneiform diseases and controlling the results in acne by testing the serum of their patients with polyvalent antigens prepared with cocci from furuncles and with colon bacilli from the feces of healthy persons.

Of 57 cases of acne vulgaris, 84.2 per cent reacted positively with an antigen of B. acne; 64 per cent reacted positively with the antigen of staphylococci from acne lesions and practically the same results were observed with the control antigen of staphylococci; 63.1 per cent reacted positively with the antigen of B. coli from the feces of acne patients and 32 per cent reacted positively with the antigen of B. coli from the feces of normal and healthy persons.

The sera of normal and syphilitic persons reacted uniformly negatively with all antigens; the sera of persons suffering with various skin diseases likewise reacted negatively in the majority of instances except those with acne rosacea and seborrhic dermatitis.

From these studies the authors conclude that B. acne may be an etiological factor in skin diseases other than acne vulgaris; that the cocci found in these lesions possess no peculiar serological characteristics such as would differentiate them from other staphylococci found in furunculosis and that B. coli appears to exert an etiological influence in some diseases of the skin and particularly acne vulgaris.—J. A. K.


It had been shown in earlier work that the sign of the Wassermann reaction might be reversed by the influence of salts, acids and alkalies on the hemolytic system. The aim of the present work was to establish a chemical standardization for definite hemolytic time indices of
different animal species, as a preliminary to determining the percentage of ammonia, sodium hydroxide, hydrochloric acid and other inorganic and organic compounds and salts, necessary to cause complete hemolysis under certain arbitrary conditions. For a fifteen minute hemolytic system there was a marked difference in the requirements for NH₃, NaOH, and HCl, for some species but not for others. Various hemolytic time indices for the substances mentioned were worked out, and by this means it was found possible to identify blood cell suspensions of different species with considerable accuracy. The following conclusions were drawn: Alkaline hemolysis may be considered due to the hydroxyl group, while acid hemolysis is due to the H-ion. "The hemolysis of the red blood cell may be used as an indicator to ascertain the degree of acidity or alkalinity of certain solutions." "Alkaline hemolysis can be influenced by acids and acid hemolysis by alkalies. Both can be influenced by the neutral salt content of the suspension." It was shown that there was a distinct variation between the normal and the pathologic blood of the same species, since the time indices of the latter specimens were increased or decreased. It is suggested that this may be due to increased alkalinity or decreased acidity, or to variation in the natural salt content.

P. B. H.

INDUSTRIAL BACTERIOLOGY

The Removal of the Natural Impurities of Cotton Cloth by the Action of Bacteria. B. S. Levene, Journ. Ind. and Eng. Chem., 1916, 8, 298.

Levene investigated the possibility of removing the nitrogenous and fatty impurities of cotton fiber by means of bacteria in place of the vigorous chemical treatment now employed. After preliminary experimentation the following organisms were found most suitable: B. amylolyticus, B. fimi, B. bibulus, B. carotovorus, B. subtilis.

These bacteria are capable of hydrolyzing starch, and decomposing cellulose or pectin or both.

Coarse cotton cloth was sterilized in nutrient broth inoculated with the above named bacteria and incubated at 37.5°C. Tests were made after one, two, and three months respectively. Slight changes were observed after one month, more marked effects after two months, and decided alterations after three months. Cloth washed and bleached was perfectly white and was not yellowed by steaming. Chemical tests showed complete removal of nitrogenous impurities, about 80 to 90 per cent of the ether soluble impurities, and from 2.5 to 40 per cent of the alcohol soluble substances. The effect on the last mentioned substances varied with the different types, B. carotovorus being the most effective. Two forms—B. bibulus and B. fimi—caused weakening of cloth; the others apparently had no such effect.

By using different combinations of organisms and different media the incubation period could be reduced to 24 to 72 hours.—I. J. K.
ABSTRACTS

MEDICAL BACTERIOLOGY


This organism, claimed to be the causative agent of Weil's disease, was obtained by the authors in a solid, a semi-solid, and a fluid medium, enriched with blood. The spirochaete thus isolated remains pathogenic for guinea pigs for many generations. The characteristics of three strains are described.—B. W.


The authors explain a slight epidemic on the grounds of a paratyphoid B. infection originating either from a carrier or from a convalescent. The paratyphoid cultures isolated, it is stated, produced gas in glucose broth.—P. B. H.


The authors report a case of chronic nephritis characterized by recurring attacks of hematuria probably caused by a Leptothrix which was present in the urine. The causal relation was suggested by the constant occurrence of the organism, its virulence for animals and the improvement in the case which took place under vaccine treatment.

P. B. H.


Chick plasma with the addition of an equal quantity of human serum furnishes a satisfactory medium, in which the fibrin network resists digestion. Human tissue may be preserved in viable condition for five to ten days, by immersion in salt solution in a cool place. The destruction of bacteria in infected tissues by means of chemical disinfectants is being investigated.—W. J. M.


Pneumonia was induced in rabbits by intrabronchial injection of pneumococci and streptococci and by the injection of egg yolk. The exudate in each instance contained many polymuclear cells but more often the predominant cells were mononuclear.—W. J. M.


Billings reports a case which "seems to present an example of typhoid fever presenting its primary manifestations in the lung in the form of
a frank, outspoken croupous pneumonia." Cultures from the blood, and from the sputum yielded \textit{B. typhi}, but the organism was not found in the stools or the urine.—L. W. F.


The author reports on the distribution, origin and means of infection in the case of the distomiasis observed in Formosa. It is shown that at least two species of crabs found in Formosa and Japan proper contain in the liver or gills large numbers of encysted larvae, and that the number of infested crabs in any district is roughly proportional to the number of cases of distoma infection. Dogs were successfully infected as a result of eating liver or lungs of infested crabs. In the final host it was shown that the encysted larvae, after entering the intestines, reach the abdominal cavity by perforating the intestinal wall near the jejunum. They then penetrate the diaphragm and pleura and finally pierce the lung parenchyma. Here they develop and lay eggs which are discharged with other degenerative tissue products through the trachea.—P. B. H.


In a previous paper the author described an original method for studying the action of tissue cultures \textit{in vitro} when inoculated with living pathogenic bacteria. In the present experiments chick embryo tissues were grown in a mixture of equal parts of plasma and Ringer solution. It was found that chicken plasma exerts a marked bactericidal action on \textit{B. typhi} and on \textit{B. diphtheriae} but is less marked with \textit{B. dysenteriae}, and slight, if present at all, with \textit{B. coli}. Chick tissues, particularly splenic tissue, counteract this action. The migrating white cells from splenic cultures have a distinctly bactericidal influence on all organisms tested except \textit{B. coli}.


In plasma tissue cultures \textit{in vitro} with tissue containing lymphatic elements the changes characteristic of early tubercle formation may be seen when such cultures contain masses of tubercle bacilli.—B. W.


The poliomyelitic virus obtained from an experimental monkey was passed through eight generations in rabbits with no apparent change in virulence. It is filterable and is virulent only for young rabbits. Even in these only about 40 per cent succumb. Inoculations were made intracranially, intravenously, into the sheath of the sciatic nerve and by placing the virus upon the uninjured nasal mucosa.
The incubation period varied from two to forty-one days with an average of twelve days. The lesions produced while definite and consistent lack the distinctive features of the pathologic picture of poliomyelitis in man and the monkey. The symptoms differ in individual rabbits and show variations from those seen in the monkey and in man.—B. W.

**The Protection of Pathogenic Microorganisms by Living Tissue Cells.**


One series of experiments was carried out to determine whether phagocytes protect ingested bacteria against the bactericidal action of serum and of potassium cyanide. While the conditions of the tests are scarcely comparable with conditions in the body, yet they point to a protecting action on the part of the phagocyte. When erythrocytes and a hemolytic system were substituted for bacteria and bactericidal substances the results were sharp and conclusive. Suspensions of dog leukocytes were incubated with rat erythrocytes and dog serum was added for its opsonic action. After an hour’s incubation anti-rat erythrocyte serum was added. It was then found that while all extra cellular rat erythrocytes were dissolved, the phagocyted red cells remained unaffected. From their experiments the authors conclude that living phagocytes are able to protect ingested organisms from the action of destructive substances in the surrounding fluid, and even from a strong homologous antiserum, and that this protection by phagocytes is largely, if not entirely, conditioned on their being alive. These findings should be taken into consideration in the study of diseases caused by infectious agents capable of living within tissue cells.—B. W.


The authors studied the therapeutic effect of lysol and protargol in experimental meningococcus infections. Neither substance proved to have any curative action on the experimental infection in guinea pigs and protargol failed to influence favorably the infection following sub-arachnoid inoculation in monkeys. It was found that both lysol and protargol exert antileukotactic and antiphagocytic effects, and are also potent protoplasmic poisons, and the leukocytes with which they come in contact are injured and made to degenerate. The mixture of antiserum with lysol and with portargol reduces to a certain extent the antileukotactic and antiphagocytic effect of the chemicals; but this action is insufficient wholly to set aside the injurious effects which they produce. Any theoretical advantages they may possess are more than offset by the harmful effects which they cause, hence specific antiserum seems to provide the logical therapeutic agent with which to combat epidemic meningitis, since it is itself innocuous and promotes those processes essential to recovery from the disease.

B. W.

This report is a continuation of the author's studies in experimental moniliasis in animals by means of a new monilia found in sprue. He feels that sufficient evidence has been gained to justify Bahr's opinion that sprue is due to a monilia, but not Monilia albicans, since he has found in Porto Rico a distinct, undescribed species in nearly one hundred cases of true sprue, and in only a small percentage of carriers. This organism is designated as Monilia X, and is ordinarily of low virulence. The virulence on long cultivation is partially or completely lost, but may be recovered by passage through susceptible animals. When promptly injected, after recovery from patient with sprue, deaths generally result from mycotic septicaemia. Feeding tests with the freshly isolated organism from the patient ordinarily failed to kill animals, but when the virulence was raised by passage, it killed by this method of administration. Some of the animals died rapidly of a monilia septicaemia, others more slowly, probably from a toxin developed by a localization of the organisms in the intestinal tract; stomatitis has been observed, and also long continued severe diarrhoea following the feeding tests. Most of the tests were carried out on guinea pigs, although rabbits, monkeys, and the white rat were also used. The gross and microscopical findings of the autopsied animals are recorded. Noteworthy is the fact that the monilia, if attacking an internal organ, were seen as large colonies having the appearance of emboli. The intervening tissue spaces were generally free from the organism, thus radically differing from a bacterial septicaemia.

L. W. F.


The author's report, as the title states, is an analysis of one hundred and thirty-four cases of bacteriemia observed during the past five years in the various services of a general hospital. An outline of the laboratory methods employed is given; also the bacteriological classification of the streptococcus group is considered. The cases are recorded under hospital case number, with age of the patient, the diagnosis, the maximum temperature, the leucocyte count and polymorphonuclear percentage, the bacteriological blood findings, the treatment, and the result. Tables are given summarizing the authors' findings. Of especial interest to the bacteriologist is the table giving the General Summary, which follows:
## ABSTRACTS

### General Summary

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<th>ORGANISM</th>
<th>NUMBER OF CASES</th>
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</table>

In the table giving the results of treatment are found twenty-five cases treated with vaccines with a mortality of 81 per cent, and four cases treated with serum, with a mortality of 75 per cent, which according to the authors shows "the futility of present measures of specific therapy of generalized infections." —L. W. F.


The authors discuss the various theories of the causation of endemic goitre, in particular, those more recently advanced, based on the view that the disease is of an infectious nature. From data obtained from the physical examination of a large number (1328) of men (University of Wisconsin) it was found that 27.2 per cent had thyroid involvement. Of these, 22.8 per cent showed infective cryptic tonsillar lesions; this was increased to 90 per cent when those having nasal lesions were included. These observations suggest a connection between the nasal and throat affections, and the thyroid involvement. Since *Entameba gingivalis* (Gros) apparently plays a rôle in the etiology of pyorrhea,
certain cases of chronic tonsilitis and systemic complications, the writer's attention was directed toward the organism. In thirty-four cases showing typically diseased tonsils, 97 per cent showed entamebae in the crypts. Of this group, sixteen individuals were treated by means of emetin hydrochloride with a disappearance of the amebea from the crypts in thirteen cases (81 per cent). Emetin was administered to twenty-three individuals, sixteen of whom showed an appreciable reduction in the bulk of the thyroid. The group included seven dysthyroid cases; six were benefited in varying degrees. The improvement under the treatment with emetin led the writers to believe that an indirect relationship existed, and they concluded that "A symbiosis of entamebae with appropriate bacteria, leading to the elaboration and absorption into the thyroid of selective thyrotoxic poisons, is at least conceivable in explanation of such relation." But they do not consider this to be an exclusive explanation of all goitres. No entamebae were found in the thyroid gland.—L. W. F.