Some Aspects of Nutritional Variation of the Gonococcus. C. E. Lankford, Dept. of Obstetrics and Gynecology, The University of Texas Medical Branch, Galveston, Texas.

A type of gonococcus is described which does not grow on autoclaved culture media, including Proteose no. 3—hemoglobin agar (Bacto) and glucose-starch agar, except in the presence of certain other bacteria or with the addition of extracts of liver, yeast, or blood or similar substances. These strains occur with considerable frequency, so that failure to detect them constitutes a serious defect in cultural diagnosis.

The addition of one part of liver extract, sterilized by filtration or preserved under toluene, to 200 parts of agar permits luxuriant growth of these deficient strains. Such strains undergo spontaneous mutation to produce variants capable of synthesis of the deficient nutritite and resembling the "normal" strains of gonococcus in all other respects. The reverse of this variation has been observed in vivo.

The factor involved is relatively simple, dialyzable, alcohol-soluble, and is destroyed by autoclaving. It is somewhat acid-labile and is not precipitated by mercuric acetate or adsorbed by activated charcoal at pH 3. Attempts to replace it by a number of known pure nutritites, including cozymase and co-carboxylase, have been unsuccessful.

All strains of the gonococcus tested grow well on casein-hydrolysate-starch agar on the addition of 1/200 liver extract. Only the "normal" strains grow if the extract is autoclaved.

Nicotinamide-Containing Nutrilites for Hemophilus influenzae. Wendell Gingrich, Dept. of Bacteriology, and Fritz Schlenk, Dept. of Preventive Medicine and Public Health, The University of Texas Medical Branch, Galveston, Texas.

Codehydrogenases I and II, which are essential as coenzymes of hydrogen transport in carbohydrate metabolism, satisfy the V-factor requirement of Hemophilus influenzae and H. parainfluenzae (Lwoff and Lwoff, 1936). We have observed growth of Hemophilus influenzae in a simple peptone medium containing $2 \times 10^4$ gamma mol of Codehydrogenase I (cozymase) per ml. of medium. Several derivatives and split products of cozymase were also tested for activity in promoting growth of H. influenzae. Codehydrogenase II, dihydrocozymase, acid-treated dihydrocozymase, desaminocozymase and nicotinamide nucleoside supported growth in concentrations of the same order of magnitude as cozymase. The structural units of the cozymase molecule; i.e., nicotinamide, d-ribose and adenylc acid, are inactive. Therefore, the nicotinamide-pentose linkage of the nucleoside is the minimum for satisfying the V-factor requirement of H. influenzae.

Accessory Growth Factor Requirements of Brucella. N. B. McCullough and Leo A. Dick, Brucellosis Research Laboratory, Clayton Foundation, The University of Texas, Austin, Texas.

Newer Knowledge of Virus Encephalitides in Texas. J. V. Irons, S. W. Bohls, and Dorothy Albert, Bureau of Laboratories, Texas State Department of Health, Austin, Texas.

INVESTIGATIONS ON TYPHS FEVER IN TEXAS. Ludwik Anisstein and Madero N. Bader, Dept. of Preventive Medicine and Public Health, The University of Texas Medical Branch, Galveston, Texas.

The work, still in progress, has been directed along the following lines:

1. Serological survey of domestic animals as potential links in the epidemiology of local typhus.
2. Mass examination of various ectoparasites of dogs, cattle and hogs as possible vectors of typhus.
3. Examination of wild rats from epidemic foci and endemo-sporadic areas of typhus.
4. Isolation of typhus strains from human sources.
5. Comparative study of the isolated strains of different origin, including louse-borne typhus.

Several hundred sera of dogs, cattle and hogs were examined for Weil-Felix reaction with positive results (1:160 up 1:320) in a proportion of cases. Striking differences were found in dogs naturally infested with ticks (Rhipicephalus sanguineus) (94.7%), as compared with tick-free dogs (30%). Similar differences were found in cows infested with ticks (Amblyomma maculatum and A. americanum) and in tick-free cattle. Hog-sera gave in 18% of the cases a strong positive Weil-Felix reaction.

Inoculation of batches of ticks and hog-lice into guinea pigs resulted in fever and occasionally in acral reactions. Some immunity against murine typhus was noted in guinea pigs inoculated with hog-lice.

Two strains of murine typhus were isolated directly from wild rats from an epidemic focus of typhus and also from an endemo-sporadic typhus area. Other typhus strains were recovered from human patients. A comparative study of all the isolated strains including louse-borne typhus secured recently from Spain is under way.

On the basis of the above results the authors are inclined to believe that domestic animals and their ectoparasites play an additional rôle in the epidemiology of rickettsial diseases in Texas.

ORGANISMS FOUND IN CASES OF ACUTE OPHTHALMIA. Charles A. Parker, Department of Ophthalmology, The University of Texas Medical Branch, Galveston, Texas.

Of the 158 cases submitted to the laboratory for bacteriological examination, 42 cases presented the clinical picture of acute conjunctivitis. Following is a list of the organisms found in these 42 cases:

<table>
<thead>
<tr>
<th>Organism</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neisseria intracellularis</td>
<td>18</td>
</tr>
<tr>
<td>Staphylococcus</td>
<td>18</td>
</tr>
<tr>
<td>Diplococcus pneumoniae</td>
<td>4</td>
</tr>
<tr>
<td>Koch-Weeks bacillus</td>
<td>2</td>
</tr>
</tbody>
</table>

We have seen two cases of trachoma. The location of the inclusion body in the trachomatous cell is usually unipolar; however, one of these cases presented an unusual picture in that bi-polar inclusion bodies were present with one seeming to invade the nucleus of the epithelial cell.

DIFFERENTIAL DIAGNOSIS OF YELLOW FEVER, EPIDEMIC JAUNDICE, AND WEIL'S DISEASE. A. Packchanian, Department of Preventive Medicine and Public Health, The University of Texas Medical Branch, Galveston, Texas.

A CASE REPORT OF COCCIDOIDAL GRANULOMA. Leo J. Peters, Dept. of Internal Medicine, The University of Texas Medical Branch, Galveston, Texas.

THE INCIDENCE OF PARASITIC FUNGI IN GALVESTON. Mildred B. John, Dept. of Bacteriology, The University of Texas Medical Branch, Galveston, Texas.

NOTES ON FUNGUS SEROLOGY. William B. Sharp, Dept. of Bacteriology, The University of Texas Medical Branch, Galveston, Texas.

Immune response is observed to an antigen from molds prepared as previously described by extraction into saline and salting out. Circulating antibody reaches high titer. Evidence on intracellular antibody is as yet inconclusive. Lethal and dermal toxicity for guinea pigs is evident, with suggestion of increased sensitiveness to such action on immunization.
FACTORS AFFECTING THE ACTIVITY OF PSEUDOMONAS-PHYTOMONAS FLUORESCENT BACTERIA IN SOIL. Roland B. Mitchell and Francis E. Clark, Bureau of Plant Industry, United States Department of Agriculture, Greenville, Texas.

Investigations have been made to determine the extent to which activity of component groups within the soil microflora can be controlled. This report considers the activity of blue-green fluorescent bacteria, as revealed by the populations determined with an asparagin-medium, dilution tube method (Clark, 1940), under differing soil conditions.

In unamended field soil, this group constituted a minor fraction of the total microflora; the group increased slightly in numbers and in relative importance following tillage and precipitation. Activity of this group was increased moderately in soil under growing cover crops, and markedly, following applications of organic materials. Plant materials added to soil increased numbers of blue-green fluorescent bacteria over longer periods than did animal manures. In soil receiving either 3.0 per cent chopped green plant material, or washed fungus mycelium from laboratory cultures, fluorescent types were increased to several hundred millions per gram. In such amended soils, this bacterial group constituted as large a percentage of the total micropopulation as it commonly does on the root surfaces of plants. Fluctuations in numbers of blue-green fluorescent bacteria on plant roots, both with different ages and species of plants, and with different methods of stem and root mutilation, are discussed.

ANTIBIOSIS IN THE ELIMINATION OF PHYMATOTRICHIUM OMNIVORUM SCLEROTIA FROM SOIL. Francis E. Clark and Roland B. Mitchell, Bureau of Plant Industry, United States Department of Agriculture, Greenville, Texas.

This report considers the elimination of sclerotia of the cotton root-rot fungus from soil. It has previously been demonstrated in this laboratory that such sclerotia are eliminated from soil amended with organic material more rapidly than from unamended soil. Current studies show the dependence of such destruction of sclerotia on microbial activity, and define certain conditions favoring antibiotic effects.

Uncontaminated viable sclerotia survived in sterile, organic-amended soil equally as well as in sterile unamended soil. In non-sterile, amended soil, incubation temperatures favoring general microbial activity were more destructive to sclerotia; incubations of 2°, 12°, 28°, and 35°C. eliminated 12, 30, 72, and 91 per cent, respectively, of viable sclerotia. At 28°C., soil moisture contents of 35, 58, and 80 per cent were found effective in the order named. The factors of aeration and soil reaction were also considered. The effects of different organic amendments were compared under constant conditions of incubation. Materials with narrow C/N ratios provided equally as great destruction of sclerotia as did materials with wide ratios; it was unnecessary to use soil amendments which would not meet good crop nutrient requirements. Types of microbial activity encountered and the application of antibiosis in field sanitation are briefly discussed.

A NEW STAINING PROCEDURE FOR THE BRUCELLA OPSONOCYTOTOXIC TEST. Leo A. Dick and N. B. McCullough, Brucellosis Research Laboratory, Clayton Foundation, The University of Texas, Austin, Texas.

THE GLANDERS ORGANISM WITH REFERENCE TO CELL INCLUSIONS. Gordon Worley and Gerald Young, Dept. of Preventive Medicine and Public Health, The University of Texas Medical Branch, Galveston, Texas.

The irregular staining of the glanders organism is mentioned frequently in the literature with different interpretations concerning this property. Inasmuch as we encountered no explanation which seemed adequate, we have made a morphological study of five strains of the Malleomyces mallei.

These organisms were found to have unstained areas when such dyes as gentian violet, methylene blue, or acid fuchsin were employed. However, when the fat stains such as Sudan Black B. or Eisenberg’s fuchsin-iodine were employed, stained granules stood out prominently. We have been
unable to demonstrate the presence of volutin.
We may state, then, that the irregular staining of the glands organism is due in large part if not entirely to the presence within the protoplasm of lipoidal granules which fail to stain readily with the usual aniline dyes.

EASTERN PENNSYLVANIA CHAPTER

One Hundred and Fifty-sixth Meeting, Philadelphia County Medical Society Building, Philadelphia, Pa., January 27, 1942

STUDIES IN SURGICAL BACTERIOLOGY. I. DISTRIBUTION OF BACTERIA AROUND THE NAILS AND ON THE SKIN IN RELATION TO DISINFECTION OF THE HANDS. Russell H. Fowler, Abington Hospital, Abington, Pa.


THE MOVING PICTURE "UNSEEN WORLDS." Harry E. Morton, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

A 400 foot, 16 mm, black and white film, with sound, illustrating the principles and some applications of the RCA electron microscope.

One Hundred and Fifty-seventh Meeting, Philadelphia County Medical Society Building, Philadelphia, Pa., February 24, 1942

A STUDY OF MICROAEROPHILIC ORGANISMS WITH SPECIAL REFERENCE TO THE USE OF A MICROAEROPHILIC INCUBATOR. S. Brandt Rose, Philadelphia General Hospital, Philadelphia, Pa.

A study of a large number of clinical specimens showed that added carbon-dioxide was necessary for the isolation not only of a limited number of organisms like Brucella, but also of many common pathogens, such as Pneumococcus, Streptococcus pyogenes, Hemophilus influenzae, etc. Experience showed that it was impossible to predict which specimen would require such an environment. Hence it is recommended that a non-ventilated carbon-dioxide incubator* be employed routinely in diagnostic laboratories. Evidence was presented to prove that this procedure yielded a significantly higher incidence of positive results. It is proposed that the incubation be designated as capneic (from the Greek, kapnos, meaning carbon-dioxide, as in acapnia) and that an organism which needs such incubation be called a capnophile.

* The author is indebted to Mr. W. H. Reynolds of the American Instrument Co., Silver Springs, Md., for providing the incubator for experimental purposes.

STUDIES IN THE PREVENTION OF AIR-BORNE INFECTION. Werner Henle, Harriet E. Sommer and Joseph Stokes, Jr., Children's Hospital, 15th and Bainbridge Sts., Philadelphia, Pa.

Animal experiments were performed in a hospital ward in order to test and to compare the effect of ultraviolet irradiation and of propylene glycol vapor on air-borne spread of respiratory diseases by droplet nuclei under controllable conditions. When heavy concentrations of air-borne hemolytic streptococci of Lancefield's group C were atomized, most of the mice died from streptococcal pneumonia and septicemia in all cubicles regardless of the distance from the bacterial atomizer. Under the influence of ultraviolet irradiation all mice but a few in the atomizer cubicle survived. Propylene glycol vapor prevented infection completely. If a low concentration of group C streptococci was used all mice including the controls survived and no organisms could be recovered from the lungs on the 8th day. However, in other experiments it could be demonstrated that a streptococcal carrier state had been induced in the control mice as shown by a provocative infection with the virus of influenza A 8 to 10 days after the exposure to the contaminated air. All mice
died from influenza but only the control groups now revealed also the streptococcus. Similar results were obtained when the virus of influenza A was atomized. While all the control animals died, propylene glycol vapor prevented death in all cubicles and under ultraviolet irradiation only a few mice died in the atomizer cubicle.

**Microbial Antagonism and Brucella abortus.** Walter Kocholaty, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa.

Of a number of antibacterial preparations tested, three substances appeared to be highly bacteriostatic and bactericidal against Brucella abortus, *in vitro*. Those substances are: pyocyanase, streptothricin (an antibacterial substance produced by an *Actinomyces* of the *A. lavendulae* type, isolated from the soil and dust), and "penatin" (a newly discovered antibacterial substance produced by *Penicillium notatum*). While penicillin, also a product from *Penicillium notatum* has only very weak antibacterial properties against *Brucella abortus*, and practically none against *Escherichia coli*, penatin is highly bacteriostatic and bactericidal against those two organisms and even more powerful against gram-positive micro-organisms, such as *Staphylococcus aureus*. Evidence has been offered that penicillin and penatin are by no means identical. As the crude culture filtrate of the mold producing penatin considerably surpasses in its antibacterial action streptothricin and pyocyanase, most of the experiments conducted were carried out with the above-mentioned mold. The best culture conditions for the production of penatin were established. Using optimal culture conditions, 0.02-0.01 ml of the crude culture filtrate in 10 ml of agar will either strongly inhibit or completely suppress the growth of *B. abortus* and an even smaller amount is sufficient to impede the growth of *S. aureus*.

**The One Hundred and Fifty-eighth Meeting, Philadelphia County Medical Society Building, Philadelphia, Pa., March 24, 1942**

Some Practical Applications of Bacteriology to Medical Nursing. Carl J. Bucher, Jefferson Hospital, Philadelphia, Pa.

**Mold Inhibition in Various Food Products through the Use of Inhibitory Chemicals.** D. K. O'Leary, E. I. du Pont de Nemours & Co., Experimental Station, Wilmington, Del.


**The One Hundred and Fifty-ninth Meeting, Philadelphia County Medical Society Building, Philadelphia, Pa., April 28, 1942**

A Simple Tube Battery for Use in Bacterial Air Analysis. W. F. Wells, Laboratories for the Study of Air-borne Infection, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

The quantitative accuracy of enrichment methods of isolating *Escherichia coli* from water, and *Streptococcus viridans* from breathed air, is statistically limited by the number of portions tested. For these methods to be useful in sanitary analysis it is necessary to simplify handling of a large number of tubes. To obviate the necessity of using cotton plugs and unwieldy racks in water analysis, Macrady substituted a single cover to a battery of fermentation tubes. Wassermann tubes have been found convenient in air analysis for distributing dilutions of collecting liquid. Fifteen of these tubes can be circled around a no. 8 rubber stopper. Two rubber stoppers held apart by a short length of glass tube form a convenient spool around which to assemble fifteen tubes held against the stoppers by rubber bands. A half-pint cylindrical aluminum measuring cup fits snugly over the battery but leaves enough of the tubes showing to observe color changes in the medium. Inoculation of the tubes and transference
to selective gentian violet blood agar and recording results are greatly simplified.

**The Boerner-Lukens Wassermann Test with Spinal Fluid with Special Reference to the Use of Egg Albumin.** Fred Boerner, Marguerite Lukens, and Alice Ellis, Graduate Hospital, Philadelphia, Pa.

**The Boerner-Jones-Lukens Macrophoculation Test with Spinal Fluid.** Fred Boerner, Marguerite Lukens, and Alice Ellis, Graduate Hospital, Philadelphia, Pa.

**Spirochetal Antigens in the Serum Diagnosis of Syphilis.** John A. Kolmer, Temple University School of Medicine, Philadelphia, Pa.

Complement fixation in syphilis with spirochetal antigens is a group reaction as positive reactions occur with antigens prepared not only of cultures of the Reiter and other strains of *Treponema pallidum* but *T. microdentium* and *T. macrodentium* as well.

Antigens prepared from cultures of these spirochetes give a small and varying percentage of nonspecific or falsely-positive complement fixation reactions with the sera of normal individuals and those with tuberculosis, malignant diseases and febrile intercurrent illnesses ascribed to the presence of natural spirochetal antibody.

Spirochetal antigens give a particularly high percentage of non-specific or falsely-positive complement-fixation reactions in leprosy and malaria just as tissue or lipoidal antigens yield a high percentage of positive Wassermann and flocculation reactions in these diseases.

The spinal fluids of nonsyphilitic individuals, however, do not give nonspecific or falsely-positive complement-fixation reactions with spirochetal antigens which is ascribed to the absence of natural spirochetal antibody in them.

Spirochetal antigens prepared from virulent *T. pallidum* recovered from acute testicular syphilomas of rabbits give a higher percentage of positive complement fixation reactions with syphilitic sera and a lower percentage of falsely-positive reactions with normal sera than antigens prepared from cultures of alleged *T. pallidum*.

Available evidence, based upon the results of absorption tests, indicates that the syphilis reagent giving positive Wassermann and flocculation reactions is entirely separate and distinct from the natural spirochetal antibody in normal sera or the acquired spirochetal antibody in syphilis yielding positive complement-fixation reactions with spirochetal antigens.

The value of spirochetal antigens prepared from the Reiter strain in the serum diagnosis of syphilis is as yet undecided. In the Washington serological survey the Kolmer spirochetal antigen was less sensitive than the Kolmer tissue or lipoidal extract (C. L.). The Eagle Wassermann reaction using tissue antigen, however, was less sensitive than a spirochetal antigen.

A mixture of spirochetal and tissue or lipoidal antigens has been found more sensitive in complement-fixation tests with syphilitic sera than spirochetal antigen alone but less sensitive than tissue or lipoidal antigen alone. The mixture has also given a smaller percentage of nonspecific or falsely-positive reactions with normal sera than the spirochetal antigen alone.

**The Moving Picture "A Lecture on the Spirochetes."** Harry E. Morton, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

Three 400 foot reels, 16 mm, black and white film prepared by Theodor Rosebury, College of Physicians and Surgeons, New York. Most of the picture is devoted to dark-field photography of the spiralled organisms of medical importance. The morphological characteristics of all the spiralled organisms are illustrated and the technique for preparing dark-field preparations is demonstrated.
THE PRODUCTION OF ANTIBIOTIC AGENTS BY MICROORGANISMS AND ITS SIGNIFICANCE IN NATURAL PROCESSES. Selman A. Waksman, State of New Jersey Agricultural Experimental Station, New Brunswick, N. J.

VIRGINIA BRANCH
UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, NOVEMBER 1, 1941

TRANSFORMATION OF FIBROMA VIRUS TO THAT OF INFECTIOUS MYXOMA. Ralph B. Houlihan, University of Virginia.

PREPARATION OF SIMPLE VACUUM FLASK. Edward Lavor, Norfolk General Hospital.

THE ACTION OF SULFONAMIDE DRUGS UPON CERTAIN FREE-LIVING PROTOZOA. Frederick F. Ferguson, Jane Holmes and Edward Lavor, College of William and Mary and the Norfolk General Hospital.

LABORATORY PROCEDURES IN THE DIAGNOSIS OF CERTAIN FUNGUS INFECTIONS. J. D. Reid and R. A. Holt, Medical College of Virginia.

THE MULTIPLICATION OF BACTERIA IN STERILE CRABMEAT. Caroling Berry, U. S. Public Health Service Laboratory at Craney Island, Norfolk, Virginia.

Cultures of Escherichia coli, Proteus sp., Salmonella aertrycke, Salmonella morgani, Eberthella typhi, Shigella dysenteriae (Flexner) and Staphylococcus aureus were inoculated respectively into autoclaved crabmeat and the rate of growth observed. Significant increases in the bacterial plate count were observed with each culture employed when the incubation temperature was 25 degrees C. or 37 degrees C. At 5 degrees C., however, the bacterial numbers decreased, although viable organisms were still present in the crabmeat after 15 days at this temperature.

THE BACTERIAL FLORA OF VIRGINIA MILK AND ITS RELATIONSHIP TO STANDARDS IN THIS STATE. F. S. Orcutt, Virginia Polytechnic Institute.

INAPPROPRIATE VIRUS INFECTIONS. Norman T. Ashenburg, Craney Island Laboratories.

CURRENT INVESTIGATIONS ON AN IMPROVED KEY TO THE GENUS BACILLUS. W. B. Coffee, R. J. Fitzgerald and F. S. Orcutt, Virginia Polytechnic Institute.

METHODS FOR THE EXAMINATION OF SHELLFISH PRODUCING WATERS. Leslie A. Sandholzer, Craney Island Laboratories.

THE INFLUENCE OF SEAWATER ON BACTERIAL PLATE COUNTS. Marjorie Smith, Craney Island Laboratories.

ROANOKE, VA., MAY 8-10, 1942

STREPTOCOCCI RESISTANT TO SULFONAMIDE THERAPY. George McL. Lawson, Department of Preventive Medicine and Bacteriology, University of Virginia, School of Medicine, Charlottesville, Virginia.

The favorable report on sulfonamide therapy of streptococcus infections in general must be modified in the future by a more careful identification of groups and types to which offending organisms belong. The classification into hemolytic, non-hemolytic and viridans groups is a time-honored but scientifically inaccurate division of the streptococci. Within each such group it is possible to pick out organisms which are pathogenic but are not affected by sulfonamide therapy. Among these are Streptococcus faecalis in the so-called viridans group and Lancefield's Group B streptococcus in the so-called hemolytic group.

Case reports are given concerning three patients infected with streptococci of Lancefield's Group B. Additional reports are presented showing the contrasting therapeutic
results of sulfonamide therapy in sub-acute bacterial endocarditis due to *Streptococcus fecalis* and to *Streptococcus salivarius*.

A SIMPLIFIED METHOD FOR ANAEROBIC PLATE CULTURES. William E. Bray and Jeanette S. Carter, University of Virginia.

HUMAN INFECTION CAUSED BY SALMONELLA SAN DIEGO. William E. Bray, University of Virginia.

CULTURAL STUDIES OF STAPHYLOCOCCI ISOLATED FROM SHELLFISH. Herbert Birtha, Velma Brewington, Alethia Greene, William Quivers and Lilly Riddick, Hampton Institute.

QUANTITATIVE DETERMINATIONS OF MYXOMA VIRUS IN NASAL WASHINGS, BLOOD, FECES AND URINE AND THEIR RELATIONS TO TRANSMISSIBILITY. Ralph B. Houlihan and George McL. Lawson, University of Virginia.

KODACHROME PHOTOMICROGRAPHY. Kenneth B. Grim, Department of Clinical Pathology, University of Virginia.

There are many methods of obtaining good photomicrographs in color. The most commonly used are those in which the Leica or Contax cameras are attached to the eyepiece of the microscope with the micro-ibso miflex or similar photomicrographic attachments. Good natural color photographs may also be obtained by using an adapter ring and placing any 35 mm. camera directly over the eyepiece of the microscope. We have found that a 3200° Kelvin light placed about one foot from the sub-stage mirror gives the best results. Type A Kodachrome film for artificial light does not have a very wide latitude and therefore the exposure must be exact, and the setup once in place must remain constant for each objective.

Since many photographers already have cameras which take 3½ by 4½ inch plates, the 35 mm. adapter for the kodak Recmar camera is a valuable adjunct, for it can be fitted directly to any of these cameras. With this adapter and with a bellows type camera, almost any desired magnification may be obtained. It is especially valuable for obtaining photographs without reduction in the size of the image. Since only the central portion of the field is photographed, a critical focus is easily obtained and there is no blurring of the periphery as sometimes occurs with other methods. This adapter is quite inexpensive and the photographs obtained with it are excellent reproductions in natural color.

NEGRO HEALTH PROBLEMS AND NATIONAL DEFENSE. T. W. Turner, Hampton Institute.


A study of the principal streams of the Ohio River has shown certain differences between streams and between portions of the same streams, in protozoan and algal plankton populations, and in fish populations. It can be shown, other conditions being equal, that these differences are closely related to the amounts of food available to the planktons, as a function of the amount of organic material introduced into the stream, either by natural means or through the direct agency of man. In general, on this basis, great differences between the streams of this basin are a reflection of differences in the amount of organic "fertilizer" available.

It has been possible to differentiate three main types of plankton: (a) a highly resistant, "thifty" group, able to withstand low temperatures and extremes of low food levels; (b) a group with need of a high level of food, usually or often organic, and a more limited range of temperature tolerance; in general, a group of forms which multiply rapidly under extremely favorable conditions, but of poor resistance; and (c) a wide group of forms intermediate between these. The first group tends to be of very wide occurrence throughout the Ohio basin, while the second is less commonly found, and then only during the warm summer months.

Five zones have been characterized, in terms of organic content, pH, dissolved oxygen, protozoan and algal plankton, and fish population, ranging from grossly polluted regions to those which are essentially sterile.
and barren. On this basis, the distribution of forms found becomes understandable.

**Dissociation of Bacillus albolactis.**
F. S. Orcutt, Virginia Polytechnic Institute.

Bacillus albolactis may dissociate into smooth and rough cultural forms, which morphologically and physiologically are identical. As with other cases of S and R forms the rough is the more stable. Neither form, however, is stable enough to give only pure smooth or rough colonies. On standard media plating of the rough form yields about three per cent smooth type colonies, while the smooth form yields about seven per cent of the rough form. Some variations in environmental factors may change markedly the ratio of the S and R forms when plated. Both forms of this organism appear normally in dairy products of Virginia and could easily be mistaken for two distinct species of Bacillus.

**Comparison of Total Bacterial Plate Counts of Soils Accurate Only after Deflocculation of Samples.** F. S. Orcutt and A. B. Stuart, Virginia Polytechnic Institute

Dilution of soil samples for plating usually involves uniform shaking to attempt equal liberation of organisms from various samples of soil. Retention of bacteria in soil is dependent directly upon the state of flocculation of the soil. This in turn is dependent upon the amount of base exchange material in the soil and the type of bases associated with it.

It follows that widely different soils and soils of the same type under variable treatment may be in various states of flocculation, so that plate counts made upon them are not comparable. Comparison can be made only when all samples are fully deflocculated to obtain uniform liberation of bacteria in the soil aggregates.

**The Possibility of False Interpretations in Tests for Acid Production from Carbohydrates Due to Peptone Decomposition.** F. S. Orcutt and L. A. Nutting, Virginia Polytechnic Institute.

Peptone is commonly used as the source of nitrogen when a Bacillus is tested for possible ability to decompose carbohydrates. Acid production is taken as the usual evidence of carbohydrate dissimilation. A number of bacilli, however, also produce acid from peptone to the extent of pH 6.0. A lower pH than this cannot be taken as a criterion of acid production from carbohydrates because acid may be produced from sugars without taking the pH lower than 6.0. Control tubes of peptone without the sugars are necessary to make the proper interpretation.

Ammonification from peptone concurrent with acid production tends to keep the pH near neutrality even though the carbohydrate is decomposed. This may be avoided by early observations, because alkali production is not extensive enough at first to neutralize acid produced from sugars. In many cases observed there appears to be no sparing action of carbohydrates on the peptone decomposition.

**Physiological Differentiation of Members of the Bacillus mesentericus Group.** W. B. Coffee and F. S. Orcutt, Virginia Polytechnic Institute

In the latest edition of Bergey’s manual, the following organisms are listed as variants of Bacillus mesentericus: Bacillus aterrimus, Bacillus globigii, Bacillus niger and Bacillus vulgaris. The characteristics by which they are distinguished from Bacillus mesentericus are not considered sufficient to retain them as individual species although these characteristics include pigment production and several carbohydrate fermentations. In actual trial the differentiation given in Bergey’s manual has not been found to be reliable. A number of additional physiological tests have been made to better differentiate the members of this group.

INFLUENCE OF CULTURE MEDIA AND HYDROGEN-ION CONCENTRATION ON PRODUCTION OF COLOR VARIANCE IN CERTAIN PLANT BACTERIA. Agnes J. Quirk, Bureau of Plant Industry, Beltsville, Md.

INFLUENCE OF RIBOFLAVIN OR THIAMINE DEFICIENCY ON FATAL EXPERIMENTAL PNEUMOCOCCAL INFECTION IN WHITE MICE. J. G. Wooley and W. H. Sebrell, National Institute of Health.

Swiss mice fed a purified diet containing all of the synthetic vitamins that are known to be essential for growth were more resistant to a fatal infection with pneumococci type I, when inoculated by the intranasal route, than were mice fed on the same diet except for restricted amounts of riboflavin or thiamine. These results were obtained whether the mice were fed ad lib amounts of diet, if the amounts eaten by those on the control diet were restricted to the amounts eaten by the mice fed the deficient diets, or if litter mates were pair fed.

When 5 times the amount of riboflavin in the control diet was administered daily either orally or by subcutaneous injections to mice that had been fed restricted amounts of this vitamin, beginning at the time of exposure to infection, there was no reduction in mortality. When 10 times the amount of riboflavin in the control diet was administered daily by subcutaneous injections to 30 mice fed a diet restricted in riboflavin or the same amount of thiamine to 30 mice that had received the thiamine restricted diet, beginning at the time of inoculation with pneumococci, there was an increase in the number of deaths.

ENCEPHALITIS. James P. Leake, National Institute of Health.


PARALYSIS OF THE IMMUNOLOGICAL SYSTEM AGAINST PNEUMOCOCCUS INFECTIONS. Lloyd D. Felton, National Institute of Health, Bethesda, Md.

RECLAMATION OF USED AGAR. Howard I. Thaller, Animal Disease Station, Beltsville, Md.