dihydroxy aminonaphthalene. In the urine of rabbits and monkeys only traces of this compound were present.

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BACTERIAEMIA IN LAND-LOCKED SALMON (SALMO SEBAGO) IN MAINE

A HIGHLY fatal epizootic occurred among yearling salmon in a hatchery in Maine during July, 1940. The disease appeared to develop very suddenly, but it is possible that a dorsal-fin disorder which arose late in the winter was related to its development.

External lesions associated with the disease consisted of small, shallow, subcutaneous abscesses seldom exceeding a centimeter in diameter and two millimeters in depth. Perforation of even very small abscesses through a central pin-point opening was very common.

The pseudobranch of all sick and dead fish was intensely hemorrhagic and some fish showed hemorrhages in the gills. A few fish developed protrusion of the eyes with an attendant darkening in color.

Internally all fish showed hemorrhages dorsal to the swim-bladder along the post-cardinals. Some had inflammation of the lower intestine and around the anus. Abscesses and hemorrhages were clearly visible in the liver, spleen and kidneys of over half of the fish.

Microscopic examination of the blood, fluid from the orbit and all internal organs showed numerous bacteria typical for bacteriaemia. The pseudobranch was also heavily infected. From the cultures isolated two types of bacteria were found most frequently. In all cases typical strains of *Bacterium salmonicida* were obtained, while from several fish an additional type of bacterium was isolated.

All strains of *B. salmonicida* isolated on different occasions were identical and cross-agglutinated up to the titre of the homologous agglutinating sera.

The second type was motile and did not liquefy gelatine. Most of the strains of this bacterium were also identical in their biological and serological properties among themselves, but differed entirely from *B. salmonicida.*

Further studies are in progress.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A DESIGN FOR A SATURATED CALOMEL ELECTRODE[1]

THE electrode was designed with the purpose of avoiding disturbance of the interfaces and contamination of the saturated KCl. It is especially suitable for electrometric titrations of acid-base or oxidation-reduction reduction potentials where flushing of the connecting arm is essential. In most of the calomel cells, the flushing is obtained either by passing saturated KCl through the whole body of the cell or by a three-way stopcock in the connecting arm. In the first case, extreme care must be taken not to alter the potential of the cell through disturbance of the active surfaces, changes of temperature or changes in concentration of the solutions. The second method may lead to leaks of KCl in the solution to be measured or to a break in the continuity of the liquid column. An excellent design is that used by Clark in his oxidation-reduction studies. But its clever, though complicated, arrangement of stopcocks makes it difficult to manufacture except by a very expert glass blower, which accordingly raises its price. In the construction of the cell here described, two standard pyrex stopcocks are used: one (A), a straight, two-way 8 mm O.D. with 2 mm bore in the plug; and one (B), a three-way capillary 7 mm O.D. and 1 mm bore. In the latter the plug is changed for a two-way right angle connection.

The cell is entirely made of pyrex glass. Electrical connection is made by means of a thin platinum wire through a heavy pyrex seal. The platinum wire beyond the seal dips into mercury placed in the bottom of the small lower bulb. This lower bulb has a small hole through which a wire is introduced as an electrical lead to the potentiometer (not represented in the diagram). Once this lead wire is in place a permanent connection may be made by fixing it with a plastic cement, which is made also to close the small hole of the bulb. The lower bulb is not completely filled with mercury, *i.e.,* the mercury does not touch the seal. This avoids any contamination of the purified mercury inside the electrode through a possible defect in the seal around the platinum wire.

The cell is filled completely through stopcock A with stopcock B open to the connecting arm. Once the cell is filled stopcock A is permanently closed. Contamination of the solution with stopcock grease may be

[1] From the Department of Physiology, Tufts College Medical School.

avoided by filling the cell through a thin glass tube introduced beyond the stopcock, which for this purpose was chosen to be of large bore. Mercury is added until its surface reaches the middle of bulb C. At this point the diameter of the bulb is the same as the body of the cell allowing a good surface of contact between mercury and calomel. The bulb is limited by two constrictions. The lower one, usually found in electrodes of this type, prevents the solutions from wetting the platinum wire. The upper constriction is filled with KCl crystals by filling the cell with slightly supersaturated KCl solution. The crystals settle and pack together in a short time. This minimizes the disturbance of the active interfaces when the electrode is moved.

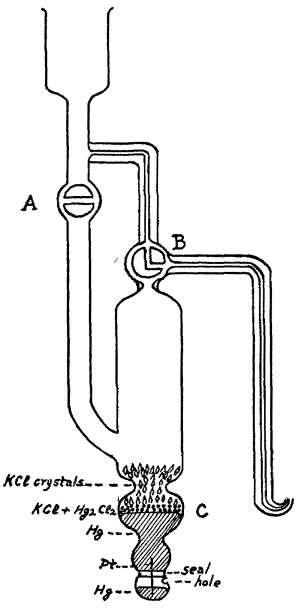

FIG. 1

Flushing the connecting arm with saturated KCl from the reservoir is done by turning the stopcock B to the position indicated in the diagram. During determinations the stopcock B is turned a quarter turn from the position in the diagram, providing a continuous column of conducting liquid with little resistance. If the cell has been subjected to changes of temperature, the change in the internal pressure can be eliminated by momentarily opening the cell towards the connecting arm after previously flushing the latter.

The end of the connecting arm may be shaped in any form desired such as the enlarged bulb type designed by Clark to obtain reproducible liquid junctions.

The cell as described is very rugged and gives very constant potentials.

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A CONVENIENT METHOD OF LABELING BOTTLES

I AM interested in the note furnished by Messrs. Gurchot and Finnegan[1] regarding the labeling of bottles. I have used the same method and found it satisfactory. Also I have found that one-inch wide transparent cellulose tape is excellent for protecting the labels on microscope slides. Formerly I used clear shellac to protect the label, but I find that cellulose tape is better since it gives enduring protection.

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HOW TO REMOVE THE PLUNGERS OF "FROZEN" GLASS SYRINGES

IN the hands of the inexperienced or of the absent-minded, a syringe that is used to draw blood often becomes "frozen." The plungers of such syringes can be removed by boiling them for fifteen or twenty minutes in glycerine. The syringe should be completely submerged in a container with walls high enough to prevent boiling over. The job should be done in a hood and the low flame watched carefully.

While the glycerine is boiling, the syringe should be removed with tongs and the plunger pulled with a towel or a pair of heavy forceps. If the plunger does not come out the syringe may be boiled again and a second or third trial made. It usually comes out the first time.

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[1] Charles Gurchot and Jack K. Finnegan, SCIENCE, 93: 2412, 288, March 21, 1941.

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