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ABSTRACTS OF RECENT PUBLICATIONS OF THE PROFESSIONAL STAFF OF THE HENRY FORD HOSPITAL AND THE EDSEL B. FORD INSTITUTE FOR MEDICAL RESEARCH

HYPERCHLOREMIC ACIDOSIS; A STUDY OF THE MECHANISM IN URETEROSIGMOIDOSTOMY. A. Waite Bohne and C. E. Rupe, Surg., Gynec. & Obst. 96:541, 1953.

Uretero-sigmoidostomy is followed in a large proportion of cases by hyperchloremic acidosis. Two hypotheses have been held regarding its cause: first, reabsorption of urinary chloride by the sigmoid mucosa, and second renal damage incident to infection and obstruction producing functional derangement. The rates of chloride absorption from the sigmoid were studied, and found to be influenced by chloride concentration, by the presence of phosphate, and, apparently, by the hydrogen ion concentration of the sigmoid contents. Formulae and examples are shown of the quantitative amount of chloride reabsorption. The frequent clinical observation of reversal of the acidosis by rectal tube drainage is evidence against the role of the kidney in this acidosis.

INTRAMEDULLARY WIRE FIXATION OF HAND FRACTURES. Robert H. Clifford. Plastic & Reconstruct. Surg. 11:366, 1953.

In 1949, the use of immediate intramedullary wiring in fractures of the metacarpals was described. Intramedullary wire fixation is a method of treatment well suited to fractures of the hand because the position of the fragments can almost always be palpated. There is no strong muscle pull, and the fractures can usually be reduced easily. The method has been used in 36 cases in the past two years, with only one slight infection. The method is easily effected, affords excellent fixation, and maintains full mobility of the rest of the hand.

RADIOLOGICAL STUDY OF THE TEMPOROMANDIBULAR JOINTS. Howard P. Doub and Fred A. Henny. Radiology 60:666, 1953.

Study of the temporo-mandibular joints calls for special roentgen technic and a thorough understanding of the anatomy and physiology of these joints.

The complaint of crepitation, snapping and disorder of movement of the temporo-mandibular joints is fairly common, and more attention should be devoted to their roentgen study. Mandibular movements are of hinge, gliding and rotary types. Anatomic types are the normal joint, the flattened gliding joint, and the marked convex joint. A description is included of the gross anatomy, and clinical findings associated with disease and injury. The roentgenographic technic used is described, and has shown the morphologic changes associated with injury, arthritis, and other diseases.

CHOLECYSTO-DUODENO-COLIC LIGAMENT CAUSING HIGH GRADE OBSTRUCTION OF THE DUODENUM: Report of a case. L. J. Gregory, R. J. Priest and J. Barron. Gastroenterology 23:659, 1953.

High grade duodenal obstruction caused by a cholecysto-duodeno-colic ligament is rare. Neff and Haden reported two cases of complete duodenal obstruction of this type in children. Death occurred in both instances from alkalosis. Necropsy revealed a cholecysto-duodeno-colic ligament tightly compressing the duodenum at the junction of the first and second portions. Solem reported three cases with clinical signs of high obstruction. In none of his cases was obstruction complete.

This successfully operated case is of interest because of the extreme degree of duodenal obstruction produced by a cholecysto-duodeno-colic ligament. This occurred in a healthy, young man who had been under our observation during his adolesence.

AN UNUSUAL TYPE OF OXYGEN TENT MAKING USE OF LIQUID OXYGEN. Frank W. Hartman and Vivian G. Behrmann. Hospitals 27:111, April 1953.

Liquid oxygen tents have replaced the conventional type electrically cooled tents in the Henry Ford Hospital since 1938. Trial and experiment with these have been carried on since 1934.

Two models of liquid oxygen tents, Model A and B, have been perfected from the early types. Model A operates on convection circulation which is adequate because the differential in temperature between the cooling chamber and the tent is so large, i.e., 70°-100° F. Model B makes use of a sparkless motor to circulate the air from the tent to the surface of the liquid oxygen in the six-gallon vacuum jar, thus eliminating wicks and making thermostatic control easy and accurate. Economy is effected by small manufacturing cost, low maintenance cost, low service cost, and, finally, low cost of liquid oxygen.

PRESENT STATUS OF PLASMA EXPANDERS. Frank W. Hartman and Vivian G. Behrmann. J.A.M.A. 152:1116, 1953.

The term "plasma expanders" is now used by the National Research Council and seems the logical name for this group of substances. The desirable properties of a plasma expander should include a molecular size large enough for 50% to be retained for 24 hours; isotonicity, sedimentation rate, osmotic pressure, and viscosity comparable to that of plasma; a molecular structure allowing slow metabolism, but not subject to prolonged tissue storage; freedom from pyrogenic, allergic, antigenic, or toxic properties; and reproducibility, and stability. There are three classes of macromolecular substances found worthy of consideration as plasma extenders. These are proteins, including serum albumin, globulin, bovine plasma, and the gelatins; carbohydrates, including gum acacia, glycogen, pectin, dextran, and okra; and the synthetic polymer, polyvinylpyrrolidone. The data from experimental work done on samples of these classes of material, support the view

that the gelatins are the most promising class of substances. The emergency use of dextran and polyvinylpyrrolidone in limited quantities as well as gelatin is justified in shock states.

GIANT INTRAMURAL LEIOMYOMA OF ESOPHAGUS. Case Report. Leo J. Kenney. J. Thoracic Surg. 26:93-100, July, 1953.

The case presented here is of interest because it concerns a tumor that is encountered very infrequently, and, in this particular instance the lesion had attained such a great size that its surgical management necessitated an operative procedure of unusual magnitude. This is believed to be the fourth such case recorded that survived a radical esophagectomy and esophago-gastrostomy. It is thought to be the largest esophageal tumor (1420 gm) ever resected surgically. The method of jejunal alimentation which was used in the management of the esophagopleural-cutaneous fistula that developed in this patient, was eminently successful in maintaining nutrition.

SPACE GROUP AND CELL CONSTANTS OF 3, 4, 5-TRICARBETHOXY PYRAZOLE. Jonathan Parsons. Acta Crystallographica 6:367, 1953.*

A space-group determination has been made for a crystalline derivative of pyrazole tricarboxylic acid, using the Weissenberg X-ray method. This compound, 3,4,5-tricarbethoxy pyrazole, was isolated in the Biochemistry Department of the Institute, using the method of Curtius (1915).

Rotation and Weissenberg photographs were prepared for the b and c axes of a single crystal of this compound. The only systematic absences found were for OkO when k is odd. This indicates that the space group is either $P2_1—C_2^2$ or $P2_1/m—C_{2h}^2$. Measurement of the unit-cell dimensions from the central lattice line spacings on the zero-layer photographs led to the following lattice constants:

a = 9.60, b = 7.33, c = 10.38 A, and $\beta = 97° 35' \pm 15'$.

The inclination angle β was measured using the method of angular lag (Buerger, 1942).

The approximate density of the crystals was found to be 1.3 g.cm. $^{-3}$ by flotation in mixtures of benzene and carbon tetrachloride. The density computed from X-ray data on the assumption of two molecules per unit cell is 1.304 g.cm.$^{-3}$. The presence of two rather than four molecules per unit cell is rather strong evidence for the space group $P2_1$ rather than $P2_1/m$ as, for the latter space group, the molecule would have to be centro-symmetrical.

A table gives the powder pattern d values and visual estimates of their relative intensities.

SIMPLE AGITATION DEVICE FOR HIGHLY RADIOACTIVE VOLUMETRIC FLASKS. L. E. Preuss. J. Scient. Instruments 30:252, 1953.*

Quantitative work with radioactive solutions involve, for the most part, the use of ordinary volumetric flasks in all size ranges. The handling of these flasks

*From Edsel B. Ford Institute for Medical Research.

becomes a problem if primary dilutions are above 25mC in activity. These conditions are frequently met when opening shipments and in the preparation of therapeutic amounts of the solutions. Accurate calibration by dilution methods often necessitate that the flask contents be carefully agitated by inversion. These procedures require some remote control device which will grasp the various flasks and allow them to be inverted while coincidently holding the stopper in place.

Such a remote handling device has been developed here. A detailed sketch of its working parts and a photograph are shown.

RUGGED SCINTILLATION-COUNTER HOUSING FOR BIOLOGICAL APPLICATIONS. L. E. Preuss. Nucleonics 11:74, 1953.*

The scintillation counter is particularly useful in biological and clinical tracer research because of its high gamma sensitivity. Such applications frequently necessitate rough handling of the instrument, while the scintillation counter itself is best adapted to bench work. This rugged use in biological applications demands a special and sturdy design.

A housing is described which is portable, operates in any position, is sturdy enough to serve as a base for heavy lead and magnetic shielding, and allows good optical coupling, with an efficient reflecting surround. The surround, also, is kept at a very low concentration of available moisture. Finally, the device allows simple assembly under dry-box conditions with easy replacement of crystal and photomultiplier.

STRUCTURAL CHANGES IN SENSITIZED HUMAN ERYTHROCYTES OBSERVED WITH THE ELECTRON MICROSCOPE. John W. Rebuck. Anat. Rec. 115:591, 1953.

Electron microscopy of intact erythrocytes from a case of acquired hemolytic anemia revealed peripheral filamentation across the plasma-corpuscular shrinkage space not present in controls. These filaments were composed of delicate strands of plasma (presumably the autoagglutinins demonstrable serologically) adherent to minute, elevated segments of the surface ultrastructure. Measurements of the affected segments revealed that they were of the same width as the strands of fibrillar cytoskeleton of the defatted erythrocytic ghosts depicted by Wolpers.

Action of Anti-A antibody upon Group A erythrocytes produced a distinguishable structural change in that pulled-out segments of the surface ultrastructure presented flat, plateau-like summits in contrast to the more rounded or spiculated projections of classic crenation. Such affected segments were 6 to 24 times the breadth of the fibrils of the cytoskeleton or its interstices, a finding consistent with the concept of the abundance of antigens of the A-B-O system in or on the erythroctyte.

Anti-Rh antibodies produced similar but smaller and less frequent distortions of the surface ultrastructure.

The relation of the structural receptor sites to antigenic sites was discussed in the light of the reported literature concerning the chemistry of the blood group substances.

Electron micrographs of agglutinated ghosts of erythrocytes were presented as evidence that sites of agglutinogenic activity were, located in these experiments, in the surface ultrastructure. Sickle-cell ghosts which retained the bizarre outline of the intact meniscocyte were obtained similarly by exposure to their specific agglutinins during the period of hemolysis.