Pavlov, Cannon, Bickel and Sasaki[3] and others have shown that in animals fear and rage may exert a most pronounced inhibiting effect on gastric peristalsis and secretion. It is also known that the clinical symptoms of gastric ulcer may be aggravated by emotional excitement due apparently to delayed evacuation associated with the hypersecretion of gastric juice commonly found in such cases. Our experiment is a clear-cut demonstration of a purely emotional dyspepsia and may serve as an additional emphatic warning to us all not unnecessarily to carry our troubles with us to the dinner table.

Raymond J. Miller,
Olaf Bergeim,
Philip B. Hawk
Jefferson Medical College

THE AMERICAN CHEMICAL SOCIETY. VI

Problems in specifications for reagent chemicals: W. D. Collins. The following suggestions are offered as a basis for discussion: (1) The American Chemical Society should establish and publish specifications for chemical reagents. (2) Strength and purity should be prescribed as high as is consistent with good manufacturing practise. (3) The method of determining strength should be fully described. (4) Only impurities likely to be present should be considered. (5) For nearly all impurities a test should be described which will give no result with a satisfactory chemical. (6) The specifications should contain no provisions for penalties or premiums for variations from the strength and purity prescribed. (7) The specifications should not in general demand the purity required for work of the very highest refinement. (8) Specifications for containers are not necessary. (9) Names of manufacturers or brands should not be used in the specifications.

The standardization of laboratory apparatus and instruments in respect to quality, shape, size and packing: Thomas B. Freas. The manufacture of apparatus in this country is necessary in order to produce enough qualified skilled workers and experts to aid in times of national emergency. The cost of labor being high, the quantity basis of manufacture is urged. The splitting of endeavor is caused by the manufacture of too small quantities of any particular piece of apparatus. Quality, shapes and sizes of glassware, porcelain ware, rubber goods, woodenware, and platinum need standardizing. Possibly the number of shapes and sizes, at least, could be reduced to such an extent that the output per individual article would be materially increased. Reasons for packing in standard packages are also given and it is shown that this will tend to reduce overhead, especially in the dealer's business and allow a consequent reduction to the consumer. It is proposed to have a standardization office with a draftsman, the expenses of this office to be met by a small fee upon all the apparatus bearing the stamp of the committee of this society. If this small fee does not seem feasible, then some scheme should be adopted by which the Bureau of Standards would be able to carry out the ideas of standardization.

Recovery of the grease from the soapy wash waters in laundering: I. N. Kugelmass. On the average a twenty-five gallon first suds waste yielded about one half liter of fatty acids extracted by gravitational separation through naphtha.

A rapid soap dissolving-distributing system: I. Newton Kugelmass. The soap-dissolving tank contains a forty-five degree inclined perforated support suspended near the top of the tank, automatically fed with soap flakes and the whole immersed in water. An electric stirring device hastens solution. The clear soap solution is distributed to washers by pipe lines. At each washer a gauge gives the volume of soap solution passing through it into the washing machine. Advantages: rapid solution, economy in soap, time, and labor, correct soap concentration in washers.

The recovery of iodine from kelp: Merle Randall. This paper is a summary of a study of the leach liquors at the U. S. Kelp-Potash Plant at Summerland, Calif. Green kelp, such as is harvested on the Pacific coast, contains about 0.0016 per cent. of iodine. The kelp is dried in direct heat driers, and chared either in incinerators or in retorts. The char is leached with hot water, and potassium chloride and sodium chloride removed from the leach liquor in crystallizing evaporators. Iodine should remain in the mother liquors. The

[3] Pavlov, "The Work of the Digestive Glands," London, 1902; Bickel and Sasaki, *Deutsch. med. Wochenschr.*, 1905, XXXI., 1289; Cannon, "Bodily Changes in Pain, Hunger, Fear and Rage," New York, 1920.

solutions contain sulfates, carbonates and reducing substances. A method for determining the upper limit, which can be profitably used for the iodide concentration in the mother liquor is discussed. The recovery of the iodine represents not only the saving of a valuable by-product, but makes the operation of the evaporator house simpler, for the reason that the carbonates and a portion of the sulfates are disposed of. The iodine is liberated by means of acid and bleaching powder. The iodine is removed from the solution by means of live steam.

A plan for incentive to research in pure and applied chemistry: W. J. HALE. The latent possibility of the university assistantship is depicted and the ideal fellowship for the university defined. The so-called industrial fellowships for industrial ends are severely criticized. Several basic premises are drawn up and these lead directly to the conclusions that university researches should be concerned primarily with pure chemistry and not with industrial problems, else, chemical progress now so much more marked outside the academic walls will still further outrank the advancement made at our universities. Both the industrial and academic world will profit greatly through investigations in the pure science, for which universities and endowed laboratories are most favorably situated. To this end, the industries, the universities, and The American Chemical Society should bend every effort to instill the proper spirit of research in our newly graduated chemists. A brief outline of "A Plan for Incentive to Research" is given. This is based upon monetary reward for original contributions to the literature. The extent of such reward is based upon the decision of the several boards of editors of the American Chemical Society. A fund for the purpose is of course required and to this end many industries will be glad to contribute. Freedom to select any particular university and to work under the direction of a personally chosen authority is shown to be an absolute necessity for the proper growth of research talent both on the part of instructor and student.

The economic status of the chemist: A. M. COMEY. Discussion of average salaries received by research chemists in a number of laboratories, January 1, 1920, compared with those received January 1, 1915. Average present salaries received by research chemists in a number of laboratories according to the number of years out of college.

Crystal growth in bearing metals: E. G. MAHIN. It is shown in this paper that gamma tin-antimony and epsilon tin-copper crystals grow appreciably in tin base bearing metals, at temperatures at or slightly below the lower border of their temperature range of formation. Specimens of chill cast bearing metals were heated to various stated temperatures, in many cases these being immersed in glycerine to prevent oxidation. After periods varying from one to four hours the specimens were examined and the crystals were measured.

The specific heat of petroleum at different temperatures: F. W. BUSHONG and L. L. KNIGHT. The results obtained together with those taken from chemical literature were presented in the form of curves. They show that the specific heat of the petroleum hydrocarbons, including paraffin, is proportional to, or a function of, the absolute temperature.

The filter press: D. R. SPERRY. The paper described the general principle of the filter press, the different arrangements possible, the materials filter presses can be constructed of, means of feeding and piping the filter press with a discussion of pumps appropriate for handling various substances and the method of attack to be used in selecting the proper arrangement for the filtration of several widely different substances. The different filtering mediums also were discussed.

Chemical corrosion: D. T. SHAW. Two types of corrosion are discussed, (1) Static Corrosion, (2) Velocity Corrosion in which the corroding liquid passes across the test piece at velocities from 8 ft./min. to 1400 ft./min. Under Static Corrosion, the effect of various factors affecting the rate of corrosion was studied as follows: (1) The shape of the test piece, within reasonable limits, has no effect. (2) The volume of the corroding liquid, above a certain minimum, is without influence. (3) The effect of concentration depends upon the solubility of the metal or of the corrosion product. (4) Temperature has a profound influence, it having been proved that the logarithm of the corrosion rate varies directly as the temperature. (5) The time of exposure of the test piece to the corroding liquid must be long to eliminate initial corrosion effects. (6) The test piece after the test should be cleaned by hand polishing with some mild abrasive such as "Old Dutch Cleanser."

A new type of catalyzer for hydrogenation: W. D. RICHARDSON. The new type of metallic catalyzer described is the invention of Mr. Benjamin

W. Elder and is covered by U. S. Patents. It is decidedly active and the activity increases in proportion to the fineness of the abrasive used and the length of time the mill is operated. The activity curve of hydrogenation rises at first with this catalyzer and reaches a maximum before declining. The catalyst prepared by this process is certainly metallic in nature and not a sub-oxide, therefore proving that a sub-oxide nickel catalyzer is not essential for hydrogenation. Since the nickel shot has been subjected to a temperature above the melting point of nickel (1470° C.), it is obvious that the previous theory that high temperatures are inimical to catalytic material must be revised, although the facts in connection with the preparation of chemical catalyzer by the reduction of nickel oxide are well known, low temperatures producing active, high temperatures inactive catalysts. The Elder process is of great importance in a practical way and for the theory of catalytic action.

Sulfites as standards for oxidizing reagents: S. Lantz Shenefield, Frank C. Vilbrandt and James R. Withrow. The use of sulfur dioxide gas as a standard for iodine or permanganate titration is beset with the host of troubles which are always possible when attempting to predestinate the content of a gas mixture in which one component is water soluble. This paper endeavors to point out the possibilities of using a weighable sulfite, preferably the heptahydrate of sodium sulfite which is mentioned in the literature for standardization purposes. A systematic correlation of the literature from this point of view is given.

Crystalline structure of paraffine wax: D. B. Mapes. A method is described for determining the structure of the wax for the purpose of ascertaining the quality in advance of the actual sweating and pressing. Paraffine distillate from petroleum is dissolved in chloroform, the solution chilled and centrifuged. The wax layer obtained is examined microscopically, while a low temperature is maintained by means of a constant temperature slide.

Mid-continent gasoline: C. K. Francis. The characteristics and methods of determining these properties were described, applying particularly to gasoline made from petroleum and natural gas of the mid-continent district. The deposit in automobile cylinders, commonly called "carbon" is, in reality, sulphur, this substance being found in crude gasoline only in very minute quantities. But gasoline is often placed on the market with large quantities of sulphur introduced during the process of refining.

The relation of chemistry (analytical and thermal) to the fabrication of steel: J. Culver Hartzell.

The relation of the electric furnace to the fabrication of carbon and alloy steels with special reference to the chemical and physical changes produced: J. Culver Hartzell.

Industrial uses of activated charcoal: O. L. Barnebey.

Inclusions and ferrite crystallization in steel: II. Solubility of inclusions: E. G. Mahin. It was shown in an earlier paper that non-metallic inclusions undoubtedly cause separation of ferrite around them, from slowly cooling steel of hypo-eutectoid composition. There was advanced to account for this action the hypothesis that the inclusion dissolves slightly in the austenite of hot steel and this lowers the solubility of ferrite and causes supersaturation of the latter first in the zone immediately surrounding the inclusion. In the present paper this hypothesis is tested by inserting metallic cylinders of various alloys and of special steels carrying abnormal per cents. of special elements, into normal steels. In nearly all cases heating to above the transformation range and slow cooling causes the appearance of a well defined ring of ferrite about the insert. This is presumed to be due to the migration of the elements of the inserts into the surrounding steel, this having an effect upon ferrite solubility similar to that of non-metallic inclusions. Lantern slides, made from actual photomicrographs, were shown to illustrate the experiments.

Charles L. Parsons,
Secretary

(*To be continued*)

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