SCIENCE

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CONTENTS:

MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

THE TWENTY-EIGHTH GENERAL MEETING OF THE AMERICAN CHEMICAL SOCIETY.

THE twenty-eighth general meeting of the American Chemical Society was held in Cleveland on June 29 and 30. At the opening session, held in the rooms of the Associated Technical Clubs, Professor Edward W. Morley gave a brief address of welcome in behalf of the Cleveland Chemical Society.

In his reply the president, Professor John H. Long, paid a well-merited tribute to the work of two Cleveland men, Professors Morley and Mabery.

In the afternoon following the first session the members of the society were taken on a most entertaining drive through one of Cleveland's chief industrial centers, where the iron furnaces, the works of the Grasselli Chemical Company and the Standard Oil Company, the ship yards and many minor concerns could be seen to good advantage.

In the evening, the visitors were again the guests of the local society at an informal smoker at the rooms of the University Club. By invitation of the officers of the society, Dr. Gomberg presented a discussion of the subject of trivalent carbon. In a very lucid and interesting talk, he outlined the way in which he was led to the discovery of triphenylmethyl, and the series of proofs by which its structure

may be considered established. He also announced that analogous substances (as, for example, the tritolyl compound) have recently been prepared, showing that triphenylmethyl is only one example of a class. The only hypothesis so far that explains the facts is that carbon is trivalent in these compounds. Specimens and some simple experiments added to the interest of the talk. The speaker was warmly applauded.

After the Tuesday morning session, held in the chemical laboratory of Case School, the Grasselli Chemical Company generously treated the members of the society to a drive through some of Cleveland's beautiful parks, followed by a luncheon at the Hollenden Hotel.

A subscription dinner in the evening was attended by forty-five. The toastmaster, President Long, to use his own phrase, 'swung round the circle,' and called on representatives from the various sections.

There were several excursions to manufacturing establishments of interest to chemists. All in all, the meeting was one of the most enjoyable the society has held, and the vote of thanks to Professor Hippolyte Gruener, to the Cleveland Chemical Society and to other local men who contributed to the enjoyment of the visiting members was hearty and unanimous.

The total attendance was 107, 70 of whom were from places outside of Cleveland.

The next meeting will be held in St. Louis during the first week of January, 1904, in affiliation with the American Association for the Advancement of Science.

Following is a list of the papers presented:

Contributions to the Chemistry of Hydronitric Acid: L. M. Dennis and A. W. Browne.

The acid is best prepared by causing ammonia gas to bubble through molten sodium kept at 350°, and treating the resulting sodium amide with nitrous oxide at a temperature of about 90°. In the second reaction a 90 per cent. yield of the sodium salt, NaN_3, is obtained. Ferric chloride is a good reagent for qualitative tests.

The Transport Number of Sulphuric Acid: O. F. Tower.

An apparatus was described having a platinum cathode and a cadmium anode. At a dilution of one fifth normal the transport number changes only very slightly with increasing dilution, indicating that at the point named practically all the HSO_4 ions have been broken up into $\overset{+}{H}$ and $\overline{\overline{SO}}_4$.

Electrolytic Conduction with Reference to the Ion Theory: Nevil Monroe Hopkins. (By title.)

The Rôle of Water in the Electro-deposition of Lithium from Pyridine and from Acetone: H. E. Patten and W. R. Mott.

Lithium may be deposited, from pyridine and acetone solutions of its chloride, on platinum, iron, aluminum and copper. The deposition is interfered with by the presence of water; in the case of pyridine very seriously so, owing to the formation of a high-resistance film.

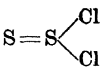
The Viscosity of Solutions of Metallic Salts: Its Bearing upon the Nature of the Compound between Solvent and Solute: Arthur A. Blanchard and Morris A. Stewart.

Change of viscosity with change of concentration is believed to follow a linear formula in cases where no definite hydrates are formed. The formation of a compound with ammonia decreases the viscosity of a metallic salt solution, while pyridine has the opposite effect.

The Vapor Tension of Ammoniacal Copper Sulphate Solutions: JAMES LOCKE. (By title.)

The Constitution of Sulphur Chloride: W. R. SMITH and I. F. B. WADE.

Two facts which speak for the asymmetrical formula



are the synthesis from thionyl chloride and the formation, when sulphur chloride reacts with such substances as zinc ethyl, of compounds containing only one atom of sulphur.

Mercurous Sulphide: CHARLES BASKERVILLE. (By title.)

Attempts to prepare Certain Rare Earth Alums, and on Some New Double Sulphates: CHARLES BASKERVILLE and HAZEL HOLLAND. (By title.)

On the Purification of Neodidymium: CHARLES BASKERVILLE and RESTON STEVENSON. (By title.)

Præseodidymium Tetroxide: CHARLES BASKERVILLE and J. B. THORPE. (By title.)

New Peroxides of Certain Rare Earths: CHARLES BASKERVILLE and T. B. FAUST. (By title.)

Mordanting with the Rare Earths: CHARLES BASKERVILLE and T. B. FAUST. (By title.)

Some New Organic Salts of Zirconium: CHARLES BASKERVILLE and H. H. BENNETT. (By title.)

The Proportions of Silver Nitrate and of Silver Sulphate Formed by the Action of Nitric Acid on Silver Sulphide: HIPPOLYTE GRUENER.

When a large amount of strong acid is used, the product is almost entirely sulphate; the maximum amount of nitrate was obtained by long boiling with 4 per cent. acid; even here 10 per cent. of the product is sulphate.

The Action of Dissolved Oxygen on Cuprous Chloride: W. M. BLANCHARD and BERT D. INGLES.

As previously shown by Vogel, water containing air acts on cuprous chloride according to the equation

$$2Cu_2Cl_2 + O = Cu_2O + 2CuCl_2,$$

but not more than 97 per cent. of the amount present can be so converted. If, however, gaseous oxygen is passed into water containing cuprous chloride in suspension, a bluish basic chloride results.

The Action of Hydrogen Peroxide on Cuprous Chloride: W. M. BLANCHARD.

A chocolate-colored basic chloride is first formed which soon changes to a greenish blue basic chloride supposed to be

$$CuO.CuCl_2.4H_2O.$$

Oxygen is simultaneously evolved.

On the Changeable Hydrolytic Equilibrium of Dissolved Chromic Sulphate: T. W. RICHARD and F. BONNET, JR.

The authors confirm the conclusion of Whitney and Recoura that a green basic substance exists in the green solution, but they show further that the substance is much more basic than was previously supposed. The investigation will be continued.

On the Deposition of Sodium from a Solution of Sodium Iodide in Acetone: H. E. PATTEN and W. R. MOTT. (By title.)

On the Deposition of Zinc Chloride Dissolved in Acetone: H. E. PATTEN. (By title.)

Derivations of Trichlorethylidene-dinitrophenamine: ALVIN S. WHEELER and M. R. GLENN. (By title.)

Some Salts of Triphenylmethyl: M. GOMBERG and L. H. CONE. (By title.)

Triphenylmethylacetate: M. GOMBERG and J. T. DAVIS. (By title.)

2-Amino-3,5-bibrombenzoic Acid, its Nitrile, and Synthesis of Quinazolines from the Latter: Marston T. Bogert and William F. Hand.

Both anthranilic acid and its nitrile can be brominated directly by the nascent bromine obtained by the interaction of potassium bromide, potassium bromate and hydrochloric acid. Anthranilic acid gives, in this way, 2-amino-3,5-bibrombenzoic acid. The nitrile gives the corresponding bibrom compound.

The Acids of the Colophonium of the Northern Pine: G. B. Frankforter and Clara Hillesheim.

The colophonium of the northern pine, instead of being, as Luce thinks, a single compound corresponding to the acid $C_{20}H_{30}O_2$ (abietic acid), is found to contain two acids, $C_{25}H_{38}O_5$ and $C_{38}H_{55}O_4$, which can be separated in the form of the ammonium salts by passing dry ammonia into a dry ethereal solution.

The Products of the Pitch of the Douglass Fir: G. B. Frankforter.

The butt of this tree is unusually rich in pitch, containing as high as 41.6 per cent. Of the pitch, 21 per cent. is turpentine. The latter has about the same boiling-point as that from the northern pine (150°) but differs from it in other properties. The turpentine and other products (pyroligneous acid, charcoal, etc.) from one such butt discarded by the lumbermen would have a value of $275.

This paper elicited much interesting discussion, especially with reference to the decrease in the production of turpentine in the south.

The Derivatives of Eugenol: G. B. Frankforter and Max Lands.

Eugenol forms a di-, tri- and tetrabromide, in each of which all but one bromine atom enter the ring. In the case of chlorine derivatives all but *two* atoms enter the ring. A pentachloride was obtained, but not a pentabromide.

The Synthesis of β-Methyladipic Acid: W. A. Noyes and I. J. Cox.

This is the first synthesis of this compound from simple materials; by starting with levulinic acid, passing to the valerolactone, thence to γ-bromvaleric ester and synthesizing with cyan-acetic ester. α-β-dimethyladipic acid was also obtained.

Kansas Petroleum: Edward Bartow.

The field is comparatively new. Nineteen specimens collected from various parts of the state show the unusual variation of from 0.84 to 0.94 S. G., and a very low sulphur content. The bromine absorption is greatest for the heavy oils.

The Determination of Sulphur in Iron: Allen P. Ford and Ogden G. Willey.

A review of the methods in common use. Evolution methods usually give results entirely too low; oxidation methods give good results when worked by men who understand them. Bamber's method is recommended as being generally applicable, and deserving of more attention than it has received.

The Toxic Limits of Acid for Some Seedlings: Frank K. Cameron.

The results of these experiments show clearly that, owing to variations caused by the effects of light, temperature and the individual characters of plants, methods of this nature do not furnish safe conclusions in physical-chemical investigations.

On the Chemistry of the Colon Bacillus: Mary F. Leach. (By title.)

Nitrification in Arable Soils: W. A. Withers and G. S. Fraps. (By title.)

Analysis of Sea Water from Woods Hole, Mass.: A. P. Saunders.

Analysis of a small sample showed a total of solid constituents much lower than that usually given for Atlantic water.

In the discussion one of the members stated that another sample, drawn from the same locality but at a different time, was found by him to be of normal composition.

On the Relation of the Specific Gravity of Urine to the Solids Present: J. H. LONG. (By title.)

Cereal Foods: EDWARD GUDEMAN.

Analysis of a large number of samples from forty-three different manufacturers shows an average composition of

Ash	0.3
Fiber	0.5
Fat	0.7
Proteids	10.5
Carbohydrates (by difference)	88.0
	100.0

The Determination of Starch: W. A. NOYES and R. B. ARNOLD.

One of the objects of this work was to determine the best conditions for hydrolysis. One hour is the most favorable length of time with 0.5 per cent. acid at a temperature of 100°, or half an hour at 111°. Solutions giving 2 per cent. glucose give better results than those giving 0.5 per cent. glucose. In neutralizing the acid, it is much more desirable to stop a little short of the exact point rather than to overstep it. The greatest hydrolysis that could be obtained was 96–99 per cent. of the theoretical.

AUSTIN M. PATTERSON.

THE CASE FOR VACCINATION.

THE recent appearance of an admirable book entitled 'A Concise History of Smallpox and Vaccination in Europe,' by Edward J. Edwardes, has aroused new enthusiasm among British sanitarians in their efforts to undo the evil effects of the last Vaccination Act, which permitted the exemption of those persons known as 'conscientious objectors.' Its lesson is equally salutary in this country, where the vaccination laws are at present far too lax, and where the opponents of vaccination are conducting an active campaign for their repeal.

It should be frankly acknowledged that the responsibility incurred by the state in compelling its citizens to submit to the introduction of vaccine matter is a grave one. It is, in the first place, a serious infringement of personal liberty; and, in the second place, it must be owned that the process is attended with a certain, though an almost inappreciable, amount of danger. When arm-to-arm vaccination was practised, loathsome diseases were occasionally conveyed from one human being to another, but the general introduction of calf lymph now prevents the possibility of any such contingency. The transmission of tuberculosis, too, is effectually precluded by the tests to which the calves are submitted and by the addition to the lymph of glycerin. Erysipelas and tetanus, on the other hand, still sometimes follow vaccination. In a very large majority of cases these complications are due to secondary infection by the removal of dressings from the vaccination wound; in a few instances they have been traced to infection of the lymph itself. The extent of these dangers is, however, very slight. Dr. McFarland* in a careful review of all previous medical literature, was last year only able to find 95 cases of tetanus recorded as due to vaccination. The total number of deaths from erysipelas in the United States in 1900 was 2,861, and the total number from tetanus, 1,664, in a population of 75,994,575 with 1,039,094 deaths from all causes; and it can scarcely be claimed that any large proportion of this insignificant number was due to vaccination.

On the other hand, the benefits which

* 'Tetanus and Vaccination,' *Journal of Medical Research*, VII, 1902, p. 474.