215,471.—*Process for freezing and pressing paraffine oil.* T. M. McMillan.

Crude paraffine oil from petroleum is cooled down to about 0° F., and the liquid part separated while cold by filtering under pressure.

215,477.—*Assayers self-calculating sample and button weighers.* T. S. Phillips.

215,572.—*Purifying, circulating and rarifying air.* A. T. Chase.

Air, before being admitted into the room, is conducted over ice, then heated and finally passed "over disinfecting chemical substances."

May 27, 1879.

215,756.—*Process and apparatus for distilling petroleum.*—J. L. Kirk.

The crude petroleum enters in a continuous flow a series of parallel pipes connected at their alternate ends, and placed in a furnace. The vapors evolved in the separate sections of the pipe pass through filters, and after being mixed with sulphuric acid vapors are separately condensed.

215,757.—*Composition for casting ornamental figures.* A. Kiesele.

The composition consists of a mixture of paraffine and starch.

215,811.—*Process and apparatus for mashing grain.* T. A. Eberhardt.

In order to prevent the formation of acids in the mash, the malt is mixed with the boiled grain in vacuo.

215,875.—*Lubricating materials for use in wire drawing.* A. B. Brown.

A mixture of a solution of alkaline phosphate and flour.

215,899.—*Solutions for galvanic batteries.* Chas. A. Ehrenberg.

Claim: The use of urine as an excitant in galvanic batteries

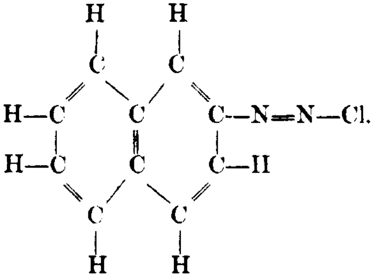
MISCELLANEOUS.

At the conversazione of May 15th, held at the Stevens Institute of Technology, Hoboken, N. J., President Henry Morton and Mr. Wm. E. Geyer exhibited a number of specimens and some experiments illustrating the formation of the new dyestuff now beginning to attract much attention, and known by the trade names of "fast-red" and "rocceline," and which is, in fact, a compound from diazo-naphthaline and β naphthol, together with sulphuric acid, and by preference, also, with an alkaline base; in other words, a sodium salt of the sulpho-acid of oxyazonaphthaline.

The process of building up this compound, beginning with naphthaline, is as follows:

Naphthaline, by treatment with nitric acid, is converted into nitro-naphthaline. This, by distillation with acetic acid and iron, is converted into naphthylamine, and this, by addition of hydrochloric acid, into hydrochlorate of naphthylamine. If a solution of this salt, acidulated with hydrochloric acid, is poured into a solution of sodium nitrite, the naphthylamine will be converted into diazo-naphthaline, by the introduction of an atom of nitrogen in place of the two hydrogen atoms of the amine root.

This body will remain combined with chlorine as a chloride of diazo-naphthaline. Its graphical formula would then be as follows :



or $C_{10}H_7—N═N—Cl$.

This body and others like it, in reference to its diazo branch, have a remarkable facility in uniting with many phenoles and amines, thus forming highly colored compounds, which alone or as sulpho-acids, have the property of staining animal tissues, such as wool, silk, &c., without any mordant.

In the particular case before us, this diazo-naphthaline is caused to unite with that variety of naphthol known as β naphthol.

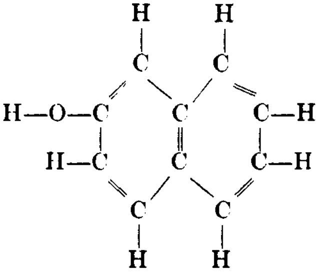
This is prepared as follows :

Naphthaline is heated with oil of vitriol to a temperature of 180° C., and is thereby converted into a sulpho-acid of naphthaline, which may be distinguished as the β variety. On dilution with water, the unchanged naphthaline precipitates, and the clear liquid is then treated with lime, to remove excess of acid. By this treatment the sulpho-naphthylic acid is converted into a lime salt ; this lime salt is freed from the sulphate of lime, and by treatment with carbonate of soda is converted into a soda salt, which, being freed from the carbonate of lime, is concentrated and crystallized.

This sodium salt of β sulpho-naphthylic acid is then fused with caustic soda, by which a compound of β naphthol and soda is formed, and this, by addition of any strong acid, yields β naphthol, which deposits as a powder, gradually acquiring a crystalline character. It may be purified by crystallization from solution in hot water, and when dried on a filter acquires a silvery lustre of unusual beauty.

If exactly the same treatment is pursued, except that the naphthaline is heated with oil of vitriol, only to 100° C., we obtain at the end a very different naphthol, known as α naphthol, which crystallizes in long needles instead of plates, and throughout its stages of formation is remarkable for forming much more soluble compounds than the β variety.

The graphical formula of naphthol, so far as we know, may be given as follows:



$C_{10}H_7—O—H$.

Little or nothing, however, is known about the position of the hydroxyl molecule; and, at all events, we have as yet no idea as to what constitutes the difference between the α and β varieties, which presumably can only differ in this respect.

By simply pouring together solutions of the chloride of diazo-naphthaline, shown in the first formula, and of β naphthol, a red precipitate is quickly formed which consists of oxyazonaphthaline; and when this is treated with strong fuming sulphuric acid, the sulpho-acid compound results, which constitutes the beautiful red dye-stuff named "fast red" or "roccelline," as we mentioned at first.

If, however, at the corresponding stage of the operation, we add a solution of α naphthol in place of the β naphthol, the solution acquires an orange in place of a red color, and on further treatment only yields a brown dye.

In place of introducing the sulpho-acid at the end of the operation, as above, it may be introduced either into the naphthylamine, forming naphthionic acid, or into the naphthol. In these two cases it is, of course, to be presumed that in the final compound the sulpho-acid will be in different parts of the molecule in each case. Where the sulpho-acid is introduced after the formation of the oxyazo compound—we as yet have no idea as to where it is attached.

The formation of the oxyazo compounds in these several ways was exhibited to the members present, the lecture table being illuminated by the electric light to show the various color changes.

President Morton then alluded to the statement in Maumene's recent work, that sugar inverted by boiling alone, or with acid, had a greater specific sweetness than cane sugar, and stated that as a result of a number of experiments made under his direction by Mr. Henry Beckmayer, in which the opinions of many persons unacquainted with the experiments and ignorant of the composition of the various solutions, had been collected, he found Maumene's statement to be confirmed in so far that the inverted sugar was weight for weight, somewhat sweeter than cane sugar, and that including the gain in weight by inversion, a given weight of cane sugar would certainly acquire at least ten per cent. more sweetening power by inversion. Solutions for comparison were presented to the members present.

ERRATA.

Page	4,	Line	33.—Frehling, read Fehling.
"	6,	"	3.—. After, read after.
"	64,	"	14 and 15.—Insoluble hydro. Soluble carbon. read Hydrocarbon { Insoluble. Soluble.
"	82,	"	20.—$C_8H_2Ba_3NO_6$, read $C_8H_2ba_3NO_6$.
"	82,	"	27.—$C_8H_2Ca_3NO_6$, read $C_8H_2ca_3NO_6$.
"	111,	"	3.—J. C. Battershall, read J. P. Battershall.
"	111,	"	13.—$WO_3Na_3O + 2$ Aq., read $WO_3Na_2O + 2$ Aq.
"	111,	"	28.—7th and 8th, read 7 and 8.
"	113,	"	8.—parted, read pentad.
"	116,	"	27.—divided, read derived.
"	116,	"	32.—amide, read α amide.
"	116,	"	38.—The acid, read the acid.
"	117,	"	5.—into hydrochloric, read into metatoluic acid, by heating with hydrochloric.