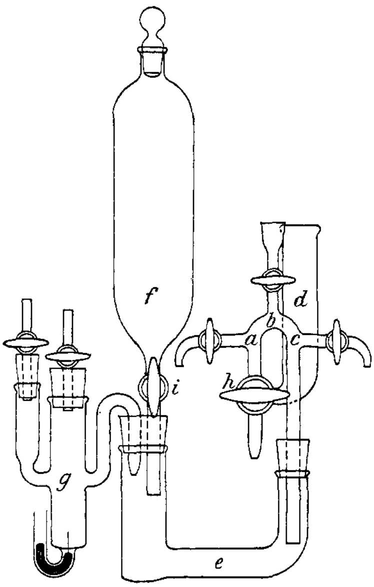
less dense than the bridge solution the junction is made at *c* by filling the empty loop *a*, *b*, *c* with the solution from *d* and drawing off solution through the stopcock *c* until sharp contact is made. A three-way, T-bore stopcock *h* is placed between the loop and the tube *d*, which is joined as closely as possible to the stopcock *h*, to minimize the distance between the liquid junction at *a* and the position for the platinum electrode, particularly when working with solutions of low conductivity, such as concentrated sugar solutions. The tube *d* connects in the horizontal position to Stopcock *h*, so that any suspended matter which may settle from the electrode solution does not interfere with the stopcock and is easily washed out through the bottom arm of the stopcock *h*.



To empty the loop for cleaning and changing solutions, the stopcock *h* is opened to bring all three branches together. Stopcocks *a*, *b* and *c* are opened and the solution is drained.

The electrode vessel is best made of Pyrex glass.

Contribution from the Carbohydrate Laboratory
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A Sensitive Glass Manometer for Gases which Attack Mercury.[1]—Baume and Robert[2] constructed a manometer for use with gases that attack mercury, consisting essentially of a flat glass diaphragm exposed to the corrosive gas, whose motion was communicated to a superincumbent column of mercury. This liquid is not suitable for the thin diaphragms required for sensitive manometers, and we have therefore substituted for it a light paraffin oil.

The construction of such a manometer, using this liquid, is evident from Fig. 1. M is a thin, disk-shaped, glass membrane 5 to 6 cm. in diam-

[1] Translated from the German and abbreviated by A. L. Dixon.

[2] Baume and Robert, *Compt. rend.*, **168**, 1199 (1919). See also, for similar manometers, Ladenburg, *Verh. Deutsch. physik. Ges.*, **3**, 20 (1906). Bodenstein, *Z. physik. Chem.*, **69**, 26 (1909). Scheffer and Treub, *ibid.*, **81**, 308 (1913). Johnson, *ibid.*, **61**, 457 (1908). Particularly, Daniels and Johnston, This Journal, **43**, 53 (1921).

eter, which serves as the diaphragm. Its chief requirement is that it shall not bulge too suddenly when subjected to pressure. The membrane is sealed to the end of the capillary k by the considerably thicker glass a. The space p inside of the membrane and the capillary are filled with the paraffin oil, which may be colored by an oil-soluble dye. The membrane is surrounded by a thick-walled jacket R. A small, thin-walled bulb K in which is sealed the sample, and a small piece of iron likewise sealed in glass, are introduced into b. The tube at e is then constricted and a current of dry air is conducted through the apparatus, passing out through the tube f. When the manometer is dry the tube f is sealed off and the apparatus is placed in a thermostat at the temperature at which the vapor-pressure determination is to be made. Only the open end of e projects from the thermostat. When the entire vessel has attained a constant temperature the position of the meniscus in k is marked. At h the apparatus is connected by heavy rubber tubing to a mercury manometer Q, as shown. When this connection is made and the tube e sealed off, the apparatus is ready for the determination. At this time the barometer is read.

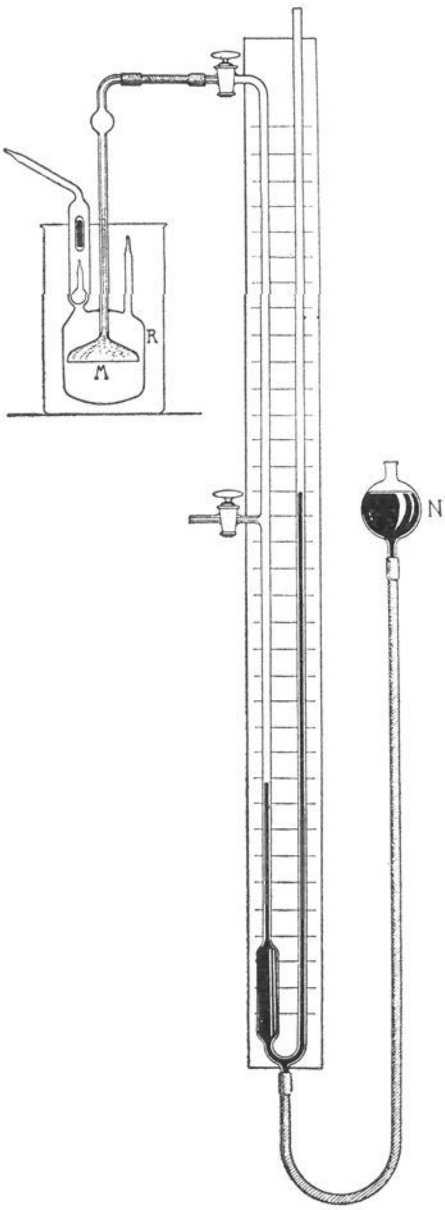

Fig. 1.

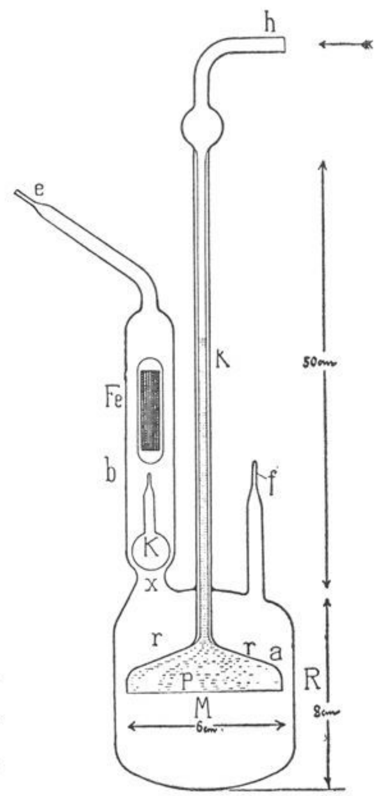

Fig. 2.—Compensation pressure.

By means of a magnet the piece of iron is made to break the bulb K. Immediately, the pressure begins to rise and is kept balanced by raising the leveling bulb N. The pressure is accurately determined by the difference in level in the manometer Q. When K contains a very volatile liquid, the introduction of glass wool at x slows down the rate of the increase in pressure.

As an example, the vapor pressures of water and benzene at 60° were determined by this method.

	P obs.	P found
Water	148.5	148.5
Benzene	390.0	392.5

Experiments lasting for two months were made with this manometer, and with pressures as high as 1.5 atmospheres. The membrane, since it is used near the position of rest, introduces only a small error due to elastic after-effects. The manometer can be made of very different sensitivities but the more sensitive it is the more cautiously it must be used. One can be made very easily in which 1.5mm. rise of oil corresponds to a pressure of 1 mm.

I wish, here, to express my thanks to Mr. Karl Söllner for his assistance in performing the experiments.

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THE ACTION OF ALKALI ON SUBSTITUTED URIC ACIDS II. 1,3,7-TRIMETHYL-9-PHENYL-URIC ACID

BY ELIZABETH STUART GATEWOOD[1]

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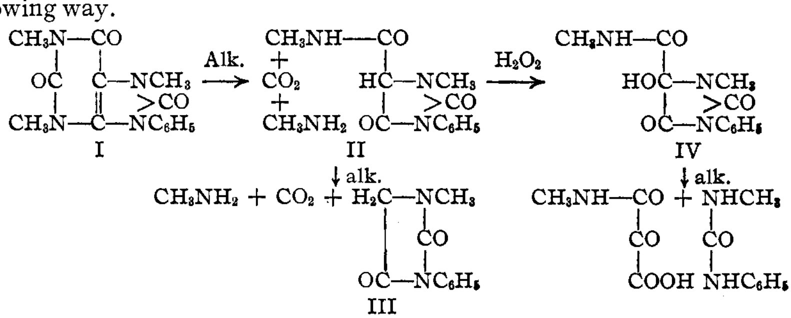
Only tetrasubstituted uric acids and trisubstituted uric acids whose substituents are in Positions 1,3 and 9 show marked instability toward alkali. In Part I of this investigation, the action of alkali on 1,3-dimethyl-9-phenyl-uric acid was described,[2] and in the following paper an account is given of the action of alkali on tetramethyl-uric acid and 1,3,9-trimethyl-uric acid.

1,3,7-Trimethyl-9-phenyl-uric acid (I) is decomposed by alkali in the following way.



[1] National Research Fellow in Chemistry.

[2] Gatewood, THIS JOURNAL, **45**, 3056 (1923).