conception is, of course, consistent with an iodine valence of five or of seven.

Geuther[1] drew from the optical studies of the color of iodine crystals by Conroy the indication that the molecular mass of the crystalline element is that of $(I_6)_n$. He made this generalization as to color of the periodides, that the tri and hepta iodides were red-brown to violet-blue, and the penta- and enneaiodides green to green-black, the higher iodine numbers giving the deeper shades.[2] He presents structural schemes of orders as follows:

For the triiodides, $(R_6I_6)I_{12} = 6(RI.I_2)$; for the haptaiodides, $(R_2I_2)I_{12} = 2(RI.I_6)$; for the pentaiodides, $(R_4I_4)I_{16} = 4(RI.I_4)$; and for the enneaiodides, $(R_2I_2)I_{16} = 2(RI.I_8)$.

In the laboratory of the writer the preparation of periodides of pyridine is in the hands of Mr. P. F. Trowbridge, and an account of some of these is communicated by both of us in another paper, while he continues the work for pyridine and quinoline. Some work on periodides of the more simple of the aliphatic bases is in other hands. In this subject a pyridine normal polybromide, namely a trimethylene bromide, obtained by Mr. R. F. Flinterman, is reported upon in a paper by him and myself. Therewith it is desired to continue studies of the limit of tertiary base addition to halogen alkyls which are secondary and tertiary. I submit also a note with the observations of several workers upon the preparation and properties of a few pyridine alkyl normal iodides, and Mr. S. H. Baer has some work in progress with me upon pyridine alkyl hydroxides.

ANN ARBOR, MICHIGAN.

AN IMPROVED GAS REGULATOR.

BY F. P. DUNNINGTON.

Received August 7, 1895.

SOME years ago I published[3] a description of a gas-regulator, which is now so modified as to make it less bulky and more reliable. Its arrangement may be understood by reference to the

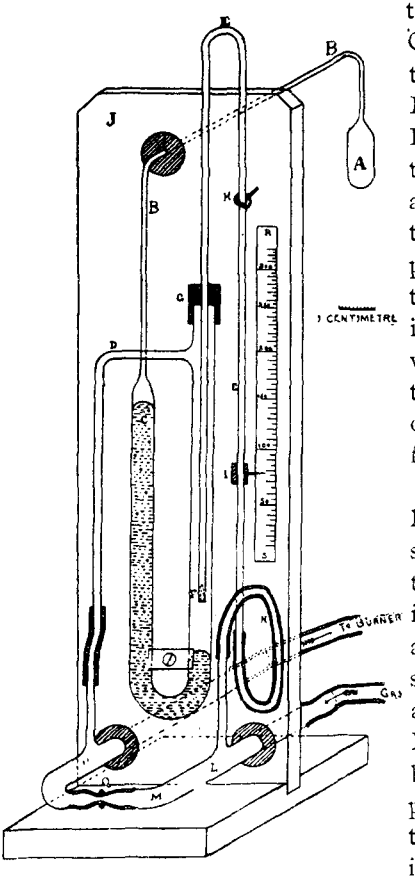
[1] *Ann. Chem.* (Liebig), 240, 85.

[2] This generalization, to which Prof. Geuther acknowledged reported exceptions, finds little support in the observations which Mr. Trowbridge and the writer have been able to make.

[3] *Am. Chem. J.*, 4, 2.

figure, with the accompanying scale the measure of the inner walls of the tubes may be ascertained, and other dimensions are drawn to two-thirds of this scale.

The tube B with stout walls, about forty cm. long is attached to the bulb A. Into the tube C, thirty-five cm. the small side tube D is fused. Unite C to B, and bend all as indicated. Into the tube L fuse the side tube and at M, bend at right-angles; similarly make the tube O. These latter are passed through corks, set in the upright board J. B also is passed through this board, which then serves to screen the apparatus from the heat of the bath, and C is firmly fastened to it.



The light tube E, fifty cm. long terminates at F with a slit, made by blowing a hole through its side and then drawing it out. This slides through a joint at G, made with two sections of rubber tubing, and also through a screw-eye at H. Upon E slides a bit of rubber tubing I, which is compressed by a wire around it, the end of which serves as an index. E is connected to L by fifteen cm. of light one-eighth rubber tubing, D is connected with O, and L is joined to O by a rubber tube pinched by a screw clamp at Q. A piece of card-board, RS, is pasted to the board. By warming and cooling the tube C is filled with mercury, as indicated. To graduate the apparatus, connect L with gas supply and O with a burner, pinch the tube at N, open Q sufficiently

to maintain a small flame, relieve N and push down E until the flow of gas through F just ceases; then slide the index I almost to the lower end of E, and upon the paper mark the point corresponding to the temperature of the bulb A. Place bulb A and a thermometer in a water-bath, with the burner beneath, and raise E. When the temperature of the bulb A is, say 50° C, lower E until the flow of gas through F just ceases, and make a mark on the scale for 50°, similarly fill out this scale to 100° C., and for higher temperatures employ an air-bath, or preferably a paraffin bath.

In using the apparatus, E is lowered until the gas through F is just cut off and the index is moved up or down the tube until it points to the figure marking the temperature of the atmosphere in which A is exposed. Having fixed the index, the tube E is raised until the index marks the temperature at which it is desired to maintain the bulb.

This adjustment of the index, whenever the regulator is used, eliminates the effect of the thermometer and barometric pressure upon the volume of air confined in A, B and C, and so corrects a defect existing in most instruments of this kind.

UNIVERSITY OF VIRGINIA.

INSPECTION OF COTTON FOR USE IN THE MANUFACTURE OF GUNCOTTON.[1]

BY CHARLES E. MUNROE.

Received August 2, 1895.

WHEN converting cotton into guncotton by immersion in mixed acids, as practiced in the Abel process, it is essential that the cotton should rapidly absorb the acid for if the portion that is taken for immersion be but slowly absorbent, it is likely when but partly saturated to rise to the surface of the acid and on exposure to undergo the rapid decomposition technically called "firing" To secure the desired result the cotton should be free from oil, grease, and any protecting body. Their presence not only diminishes the absorptive power of the cotton but they, in common with the knots, tangles, cops, hulls, seeds, or similar foreign bodies, promote decomposition. It is a common practice to

[1] Read at the Brooklyn meeting.