to discover whether this reaction had been previously investigated, and finding no record of the kind we assumed that it had not. We find, however, that our search of the literature was not sufficiently thorough, for Prof. Dr. A. Pinner, of Berlin, has called our attention to the fact that he carried out the same reaction many years ago with benzamidine[1] and obtained an analogous product. Pinner called his product a "dihydrodiphenyldioxy*antetrazin*," while we described ours as a "dihydrodimethyldihydroxy-*naphtotetrazine*," following in this name the nomenclature adopted for such heterocycles by Richter's Lexikon.

In comparing Pinner's diphenyl derivative with our dimethyl derivative, it is interesting to note that he assigns a similar structure to his product, and that in general the two compounds behave similarly. Both are insoluble in practically all solvents except the caustic alkalies, and are very inert. Both form well crystallized sodium salts; that of the diphenyl derivative carries four molecules of water, while ours carries six.

We wish to make this apology to Prof. Pinner for having overlooked his work, and hope that he may find something of interest in the results secured by us, which corroborate and extend the reaction which he was the first to investigate.

M. T. BOGERT AND A. W. DOX.

COLUMBIA UNIVERSITY, January 19, 1906.

Blast-lamp for Gasoline or City Gas.—The writer has designed the burner shown in this drawing and while no claim whatsoever is made to any originality, he thinks he may confer a favor in describing it to iron and steel chemists who have had some trouble in obtaining a good blast-lamp and who require a high temperature burner at a greatly reduced cost. All the materials required are ¾-inch tee, ¾-inch pipe, ⅛-inch pipe and plugs of brass. They are assembled as shown. The wooden block shown in Fig. 2 is the support for the burner. It can be secured to the laboratory desk by a rod and tap, a hole being bored through the center of the block. This gives perfect rigidity with enough play to get the burner directed at any convenient angle. The air pipe is usually reduced to various sizes of capillary bore, from 1/64 inch up. This, of course, must be determined by the pressure of air available and the kind of work the

---

[1] Ber. 22, 2625.

burner is required to perform. In this laboratory I have six in use giving anywhere from a brush flame 20 inches high to a fine "hat pin" flame. The air supply is compressed air at 80 pounds pressure from a main supplying the steel works. Any pressure will work very well. The gas is made by forcing air through gasoline contained in a 60-gallon steel tank, with proper safety and check valves.

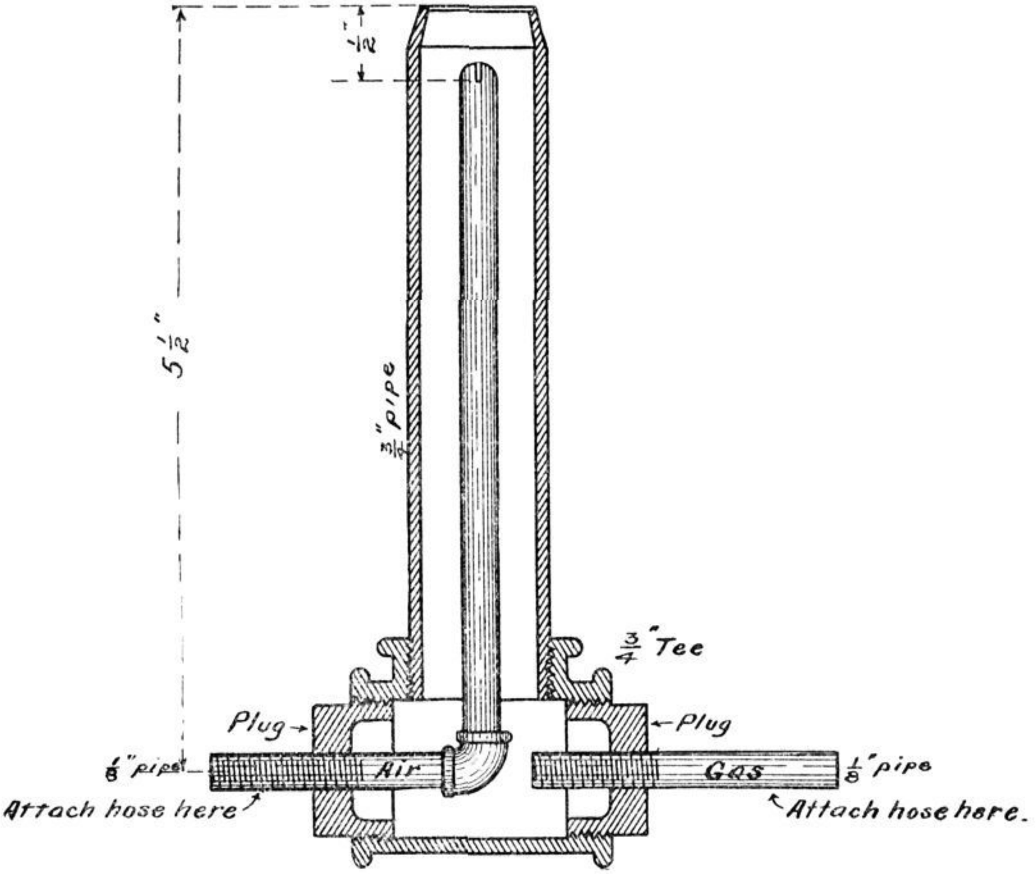

Fig. 1.

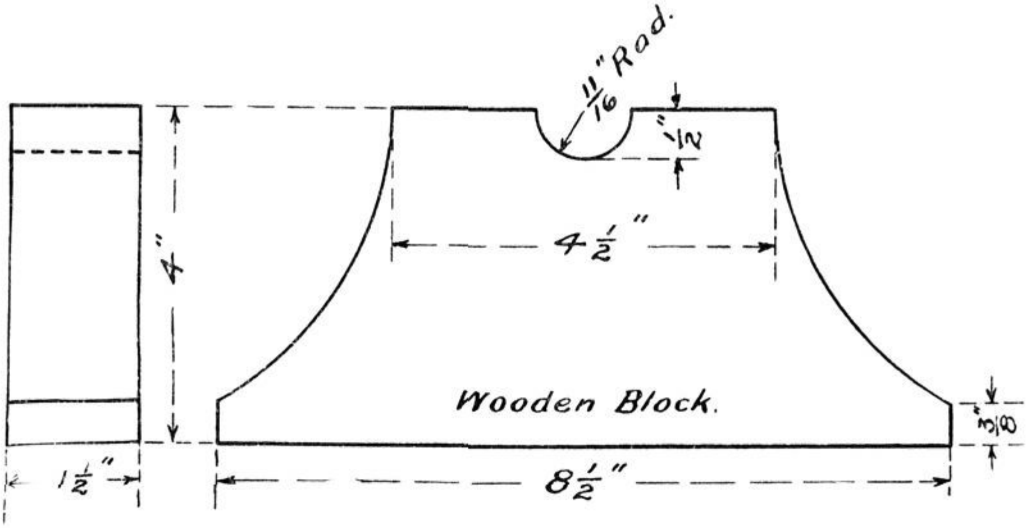

Fig. 2.

The blast-lamp materials and time will cost thirty cents each, so that it represents quite a saving over the usual burner sold, and it operates perfectly and gives an intensely hot flame. Silica may be blasted to whiteness in one minute easily and ore fusions made with great rapidity. It is admirably adapted for carbon combustions in a platinum crucible giving the bottom of the Shimer crucible an intense heat, so hot indeed that the film of carbonaceous matter can be burnt from the top of the Gooch crucible inclosed.

RANDOLPH BOLLING.

LABORATORY OF NOVA SCOTIA STEEL AND COAL CO.,
SYDNEY MINES, CAPE BRETON, CANADA.

REVIEW.

INORGANIC CHEMISTRY.

BY JAS. LEWIS HOWE.

Received January 2, 1906.

IN reviewing the progress of inorganic chemistry during the past year, before running over the field systematically there are two subjects of general import which should be considered. These are solutions and the so-called complex salts. The former of these properly belongs, perhaps, to the division of physical chemistry, and yet its bearing on the department of inorganic chemistry is such that some consideration of it must be regarded as within the scope of this paper. It is, however, only in the work that has been done on non-aqueous solutions that the field of the physical chemist will be trespassed upon.

Franklin has continued his studies of solutions in ammonia (this Journal, **27**, 191, 820), the latter paper containing one of the most notable generalizations recently made in chemistry, in that ammonia solutions are brought into line with water solutions. As water from the standpoint of solution is to be looked upon as a compound of $\overset{+}{H}$ and $\overset{-}{OH}$ ions, so ammonia is a compound of $\overset{+}{H}$ and $\overset{-}{NH_2}$ ions. Acids dissolved in ammonia form, as a matter of course, ammonium salts, but nevertheless they retain true acid properties. Acid amides and imides also are acids in ammonia solution, urea, for example, being ionized into $\overset{+}{H}$ and $H_2\overset{-}{N}CONH$, as well as into $2\overset{+}{H}$ and $CO(N\overset{=}{H})_2$. The metal amides, as $NaNH_2$, act as alkalies, and neutralization reactions in ammonia correspond to those in water. Phenolphthalein can be used as an indicator. Salts hydrolyzed in water are "ammonolyzed" in ammonia; thus, $AsCl_3 + 3H.NH_2 = As(NH_2)_3 + 3HCl$ $(3HCl + 3NH_3 = 3NH_4Cl)$. PCl_3 gives not $P(NH_2)_3$ but $P(NH)NH_2$, and SiS_2 gives $Si(NH)_2$. This ammonolysis need not go to com-