Ore.	Al_2O_3. No. 1.	Al_2O_3. No. 2.
(*a*)	0.97	1.53
(*b*)	0.62	0.59
(*c*)	1.48	2.21

Three different ignition temperatures for method (2) were tried on ore (*a*). A low red heat, barely sufficient to redden the crucible bottom, was applied till the filter was carbonized and about half consumed; this gave results as follows: Silica 8.92, alumina 2.48. A moderate red heat, sufficient to redden the crucible (15 g.) clear to the top, and applied till the filter was entirely consumed, gave: Silica 8.88 and alumina 2.51. Igniting to bright redness gave figures much higher on silica and lower on alumina and so discordant as to be totally worthless.

The sodium carbonate fusion being considered a standard method for the determination of silica, it is evident from the above comparisons that ignition methods (2), (3) and (4) are not universally applicable to the accurate determination of silica and alumina in iron ores.

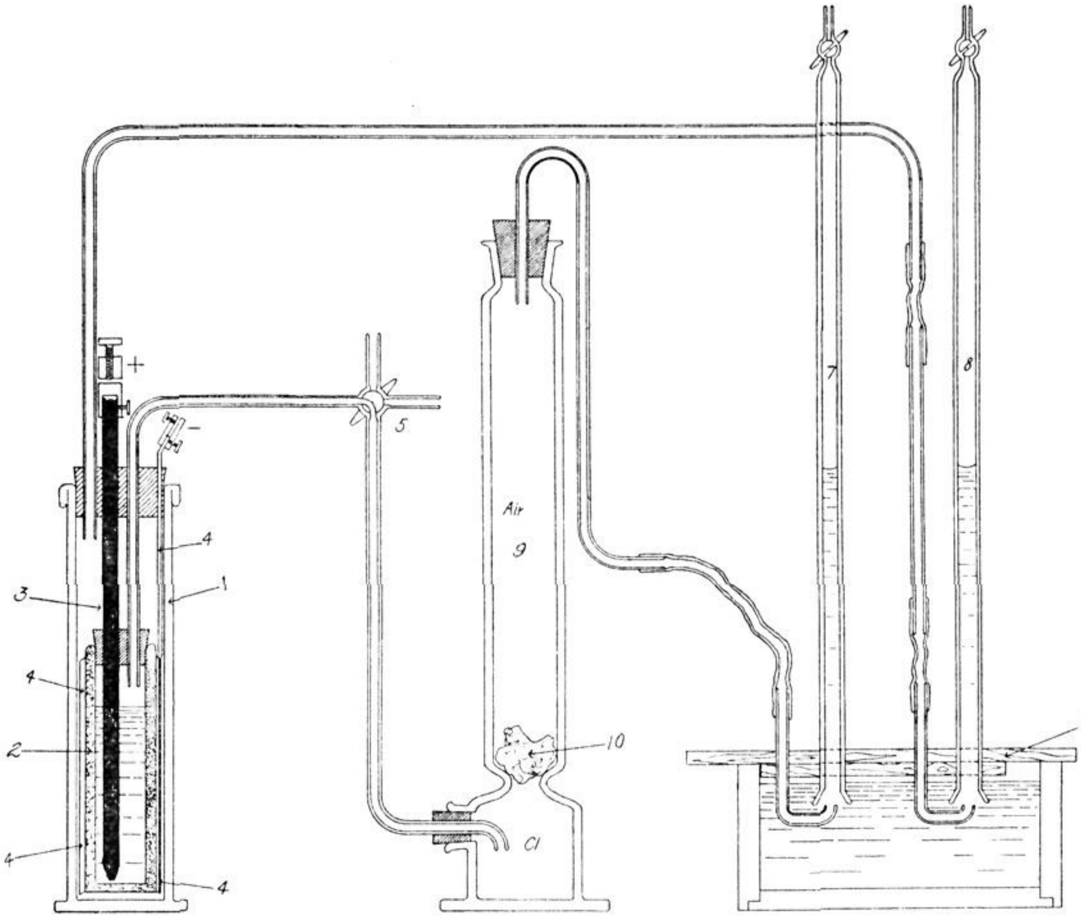
T. GEORGE TIMBY.

STEVENSON, MINN.

An Apparatus for the Quantitative Electrolysis of Hydrochloric Acid.—A desirable piece of apparatus for a lecture experiment is one that is easily put together for operation, certain to give correct results without any time-consuming preparation or preliminary adjusting. In the opinion of the writer, the following piece of apparatus for demonstrating the volume relation of the hydrogen and chlorine obtained in the electrolysis of hydrochloric acid fulfils the above requirements of "desirable apparatus."

The special points of difficulty to be overcome in an apparatus for this purpose are (1) the mixing of the catholyte with the anolyte; (2) the solubility of the chlorine in the water over which it is to be collected. In the apparatus here described, the mixing of the catholyte with the anolyte is practically entirely prevented by surrounding the anode with a porous cup. The second difficulty is eliminated by discharging the chlorine into the bottom of a tall, large cylinder, and collecting the equal volume of air forced out of the top of the cylinder. These ideas are embodied in the following design.

The electrolysis is carried on in a cylindrical glass jar, *1*; *2* is a cylindrical porous cup; *3*, the carbon anode; and *4* the cathode of sheet platinum. The glass jar and the porous cup are both closed with rubber stoppers, through which are inserted the carbon anode, the platinum wire connection for the cathode, and the delivery tubes. The chlorine delivery tube is fitted with a rubber stopper to the lower opening of the tall cylinder *9*, and the outlet tube for air is fitted with a rubber stopper to the top of the cylinder. A loose cotton plug *10*, is placed in the cylinder to retard the mingling of chlorine and air. A suitable two-way stopcock interposed as shown at *5* will be found very convenient. By means of it the chlorine may be diverted from entering the cylinder, or chlorine may be blown out of the cylinder without disconnecting the apparatus.



The air (or chlorine) and the hydrogen delivery tubes terminate in two small glass tubes, the ends of which are drawn to small openings to discharge the gases in small bubbles. These tubes are fitted into a wooden block by means of which both terminals can be placed under the collecting tubes simultaneously. The rubber tubes which connect the terminals with the main portions of the delivery tubes are made as short as possible, and are coated with shellac, to prevent diffusion, particularly of the hydrogen. Two inverted burettes may serve as collecting tubes.

To start the apparatus, the anolyte is saturated with chlorine by adding some crystals of potassium chlorate to it. The mixture may be used immediately. The anolyte and the catholyte should fill the vessels to practically the same level. After connecting up properly, electrolysis need be carried on only a minute or two (during which time the chlorine is preferably diverted from entering the cylinder) and then the apparatus is ready for the demonstration.

When put away, the electrolysis vessel, etc., should be filled with distilled water.

I am indebted to Dr. E. P. Schoch, of this laboratory, for the fundamental notions of this design. J. B. LEWIS.

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A Supposedly New Compound from Wheat Oil.—While engaged in investigating the properties of bleached flours[1] at the University of Nebraska the writer had occasion to extract about 100 cc. of wheat oil from unbleached flour by means of ether. This oil on standing for a short time was observed to deposit a considerable number of small, white crystals. Some of these crystals were removed from the oil by suction and washed on the filter with ether in which they are not readily soluble. The crystals so obtained were oily to the touch and melted to a colorless liquid at 93–94°. By recrystallization from absolute alcohol this melting point was raised to 96.5°.

That the compound contained nitrogen was proven by the usual tests.

Some attempts were made to saponify the compound by boiling with 10 per cent. alcoholic potash but the melting point remained unchanged.

At this point the investigation was broken off, owing to the fact that it was not directly concerned with the bleaching of flours. There was not obtained sufficient of the compound for a complete investigation although it is hoped by the writer to prepare larger quantities in the near future. ROSS A. GORTNER.

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February 16, 1908.

Determination of Phosphorus in Ash Analysis.—In our article in the March number of THE JOURNAL, attention was called to the fact that when the ash of cereals is burned at too high a temperature or fused, the method of determining phosphoric acid by extracting the ash with hot nitric acid gave an apparent loss of the phosphorus, although no appreciable loss in the ash occurred. More recent investigations show that the loss is not entirely due to volatilization of the organic phosphorus as was supposed, but to a conversion of the phosphorus to a form which is not precipitated by ammonium molybdate.

The following results show that even boiling the ash with strong nitric acid for an hour is not quite sufficient to recover all of the phosphorus.

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[1] Alway and Gortner, THIS JOURNAL, 29, 1503 (Oct., 1907).