brought as close to the crucible as desired by blocks of wood of different thicknesses. The burner can be removed and replaced by the blast lamp and the crucible blasted if desired. The triangles employed have been for the most part the Hoskins chemists' triangles (made of a special nickel alloy) or those of vitreous quartz.

The apparatus has the following advantages:

(1) By using triangles of the materials just mentioned the crucible has perfectly clean surroundings, and the clean smooth soapstone furnishes an excellent surface on which to cool the crucible after a fusion or to rest the lid while examining the contents of the vessel.

(2) The apparatus is compact and is, hence, very convenient for ignitions or fusions while making the same determinations on different samples since they can be kept in order and similarly treated without the operator having to change his position.

The apparatus, as described above, has been in use by the writer in the laboratory of the Virginia Geological Survey for two years and has proven very convenient and entirely satisfactory.

GAS KILN FOR FIRING ORNAMENTAL GLASS.¹

The accompanying photograph shows the construction of a kiln for firing ornamental and stained glass, designed by the Laclede Gas Light Company, St. Louis. A track is extended on each end the full

interior surface of the walls exposed in the firing chamber is faced with the same material. There are two manifolds of fifteen burners each, one along each side of the kiln, the burners being placed through pipe castings in the walls so that the flames are projected horizontally on a plane about 1½ inches over the stock to be fired.

To avoid disturbing and cooling air currents, the end openings and those about the tray, also the vent above, are shut off to a point where perfect combustion and proper temperature are obtained. Atmospheric burners of about 50 cubic feet per hour capacity each, of needle valve type, are used, and from these the maximum consumption is from 1,200-1,500 cubic feet of gas per hour. The tray or carrier is especially constructed to insure against warping and bending due to the high temperature, 2,100° F. has been attained.

AUTOMATIC LIQUID SAMPLER.

By G. L. SPENCER.

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In THIS JOURNAL, 2, 253 (1910), I described an automatic device for sampling juice in cane sugar factories. Mr. August Wedderburn, superintendent of this company's "Tinguaro" factory, has slightly modified this sampler, thus making it applicable in withdrawing liquids from pipes under heavy pressure. The construction of the sampler is sufficiently de-

length of two trays to make possible the use of more than one tray for the purpose of continuous firing. The arched ceiling is constructed of fire brick, and the

scribed in the accompanying cut from a working drawing.

Obviously, the sampler should be operated by a mechanism that enables it to always draw the same

¹ Bulletin National Commercial Gas Association, April, 1911.

aliquot part of the material to be tested. In the case of a cane mill, this is readily accomplished by driving a crank shaft off a mill-roll shaft. In sampling

ing to the viscosity of the fluid. The dimensions given in the figure are those of samplers giving very excellent results with cane juices.

CUBAN-AMERICAN SUGAR CO.,
NEW YORK AND CUBA.

sirup, connection may be made with some moving part of the pump conveying this material.

The size of the opening in the plunger should be varied to meet the quantity requirements and accord-

REFRACTORY CEMENTS.

During the past few years great progress has been made in the development of high temperatures produced by oil, gas, pulverized fuel, special design in furnaces, mechanical stokers, etc., which has caused considerable trouble in the maintenance of fire brick structures.

The Johns-Manville Co. have developed a material under the name J.-M. Brickline Cement which is especially adapted for coating over the exposed surface of fire bricks; it is claimed to be equally valuable on hard-burned or soft-burned bricks, inasmuch as the glaze that is formed by its application to the exposed surface of a fire brick structure reduces the porosity on the face of the brick and renders it impenetrable to the exceedingly destructive influence encountered. It increases the mechanical resistance of the brick, which better enables them to resist abrasion, etc.

SCIENTIFIC SOCIETIES

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.

The local committee of the American Society of Mechanical Engineers, E. M. Herr, *Chairman*, Elmer K. Hiles, *Secretary*, having in charge the preparations for the Convention of the Society, which will be held in Pittsburgh, Pa., May 30th to June 2nd, inclusive, has nearly completed the work of arranging the program for each day during the meeting.

It has been settled that the arriving guests will be received and registered at the Hotel Schenley, the society headquarters, on Tuesday morning, May 30th. In the evening there will be an informal reception for the members and ladies in the parlors of the hotel. The extensive alterations being made by the new management of the hotel will add very largely to the comfort and enjoyment of visitors during the convention.

Professional sessions will be held in the Lecture Hall of the Carnegie Institute near the headquarters, Wednesday morning and evening, Thursday and Friday morning. In the meantime there will be a number of inspection trips to various industrial plants in the vicinity, a boat excursion for the members and ladies up the Monongahela River, a reception and ball at the Hotel Schenley on Thursday evening and, finally, on Friday evening a smoker and entertainment, given by the Engineers' Society of Western Pennsylvania, in their rooms, in the Oliver Building.

A carefully prepared program for the entertainment of the lady visitors has been arranged by a committee of ladies from Pittsburgh and vicinity, which includes a number of delightful social functions.

Judging from the number of inquiries, which have already been received from expected guests, a very large attendance is looked for, and everything indicates that this meeting in Pittsburgh will be one of the most successful "spring meetings" the society has ever held.

CONGRESS OF TECHNOLOGY.

A Congress of Technology presenting a record of the practical achievements of science in modern life was held in the buildings of the Massachusetts Institute of Technology in Boston, on April 10th and 11th. This occasion also marked the fiftieth anniversary of the granting of the Institute's charter, and the Congress is therefore in part a celebration of this anniversary.

A large number of addresses and scientific papers were presented representing a wide field of activity among the officers and graduates of the institute.

PROGRAM.

Address by the President.

Some Factors in the Institute's Success.

The Spirit of Alchemy in Modern Industry.—WILLIAM H. WALKER, Professor of Industrial Chemistry, Massachusetts Institute of Technology.

Technology and the Public Health.—C. E.-A. WINSLOW, '98, Associate Professor of Biology, College of the City of New York and Curator of Public Health, American Museum of Natural History, New York.