couple should then be inserted in a tube furnace similar to the electric furnace shown in Fig. 1, with the welded end of the couple approximately in the centre of the furnace. The furnace should be up to heat before inserting the couple and should be kept at a temperature approximately 100° F. higher than the melting point of the calibrating wire. The pointer of the meter will then move up the scale with a gradually decreasing speed until the calibrating wire begins to melt, when the pointer of the meter will come to rest. After the calibrating wire has melted the pointer will again move upward. Pure copper wire, under oxidizing conditions, melts at 1,065° C. (1,949° F.) and pure zinc wire at 419° C. (786° F.). In order to have a strictly oxidizing atmosphere, an open end electric furnace should be used for calibrating work.

In using this method of calibration, care should be taken not to have the furnace temperature too far above the melting point of the calibrating wire, or the pointer will move so rapidly that the melting will be of such short duration that the holding point may be missed.

A very satisfactory way of calibrating pyrometers is by using the freezing points of melted salts as follows:

Pure common salt, Na Cl., is melted in a pure Acheson graphite crucible in an electric furnace. When the salt has been raised to a temperature of 100 or 200° F. above its melting point, the bare welded end of the thermo-couple is inserted in it to a depth of from 2 to 3 in. The crucible is then removed from the furnace and allowed to cool. The pointer on the meter will drop gradually until the salt begins to freeze, when it will stop until the salt is frozen. The freezing point of pure salt may be taken at 800° C. (1,472° F.). Before further use, the couple end should be washed clean in hot water to remove all traces of the salt, otherwise the couple will deteriorate rapidly, especially when heated considerably above the melting point of salt in an open furnace.

When calibrating pyrometers, care should be taken to see that the zero setting of the meter is in agreement with the cold end of the couple.

When the pyrometer is found to be reading too high the correction is made by increasing the adjusting resistance; and if reading too low, the resistance is decreased. The adjusting resistance is No. 26 B. & S. gauge wire of low temperature coefficient. In changing this resistance the connections should always be carefully soldered and the different turns insulated from one another.

Changing the resistance on the couple spool should not be attempted by the user unless he thoroughly understands, and has had some experience at, such work.

The following table gives the latest available data by the Bureau of Standards on certain substances which may be used for calibrating pyrometers:

Water boils at	100° C.	(212° F.)
Tin freezes at	232° C.	(450° F.)
Zinc freezes at	419° C.	(786° F.)
Common salt freezes at	800° C.	(1472° F.)
Copper, in oxidizing atmosphere, freezes at	1065° C.	(1949° F.)

Among the orders recently placed with English firms, figures an oil tank steamer of about 3,800 tons gross and about 365 feet in length for the Australian Government, to be built by Swan, Hunter and Wigham Richardson.

It is reported from Fredericton, N.B., that the residents of Granite Hill, Bear Island, Upper Queensbury and the districts on the other side of the St. John River in that vicinity are moving again to have a steel highway bridge built across the river at Bear Island.

THE CLAYWORKING INDUSTRY IN NEW BRUNSWICK.

In a report by Joseph Keele on the clay and shale deposits of New Brunswick the geological survey branch of the Department of Mines, Ottawa, has just published some very interesting information. The report covers work done in that province by the Geological Survey during 1911 and 1912. A chapter is devoted to the extent at present of the clay industry, and from it we make the following extracts:—

Up to the present time the clay deposits of New Brunswick have only been developed to a very limited extent.

Wooden construction prevails, to the exclusion of almost all other kinds, except in the business portions of the cities and towns, because lumber has hitherto been plentiful and cheap in the province.

The danger from extensive fires is always present when wooden construction is so freely used in closely-built communities. This was evident in the total destruction of the town of Campbellton by fire during the summer of 1910. Since then, the demand for structural clay wares is increasing, but they are not yet used as largely as they might be, because everything except common brick has to be imported.

New Brunswick possesses in its Carboniferous rocks, certain shale beds, adapted for making those higher grades of clay wares which cannot be produced in the Provinces of Quebec or Ontario, where these raw materials are absent. Clayworkers will probably find it to their advantage to locate works for the production of materials, not only for home consumption, but also for export.

Proximity to markets, although desirable, is not so essential to manufacturers of the higher grades of clay wares, such as face bricks, paving bricks, sewer-pipe, electrical conduits, fireproofing, etc., as these materials are frequently transported for long distances. A plant equipped for a large output of common brick can only be maintained close to cities, where the demand for them is constant during the greater part of the year. These plants frequently represent a considerable expenditure of capital, being furnished with artificial driers, continuous kilns, and machinery driven by steam or electric power. The surface clays can be worked in a primitive manner, with a small outlay of capital, to suit the demands of small towns or rural communities. Such plants are able to maintain their position, because the price of common brick would not pay the cost of carriage from large centres where their manufacture is carried on more scientifically.

When the need for underdraining the cultivated areas in the Province becomes more generally known, these clays will have a much wider application. Drain tile can be made from any of the surface clays. Tile are made from stiff mud, usually by an auger machine having a circular die, although different styles of plunger machines and also hand presses are used in their manufacture. They are made in sizes varying in diameter from 2 inches to 3 feet. Any means of drying and burning may be used with the smaller sizes, but the larger sizes require considerable care to prevent cracking. Contrary to the popular notion, it is not necessary for drain tile to be porous, so that they should be hard burned. Besides sufficient hardness, the important requirements for drain tile are straightness, uniformity of diameter, and smoothness of ends.