SAFEGUARDING the QUALITY of Willys-Overland Products

Retail Sales Manager's Film Service

One in a series of original filmstrips preserved for their historical value and presented to the members of the **Willys Overland Knight Registry**

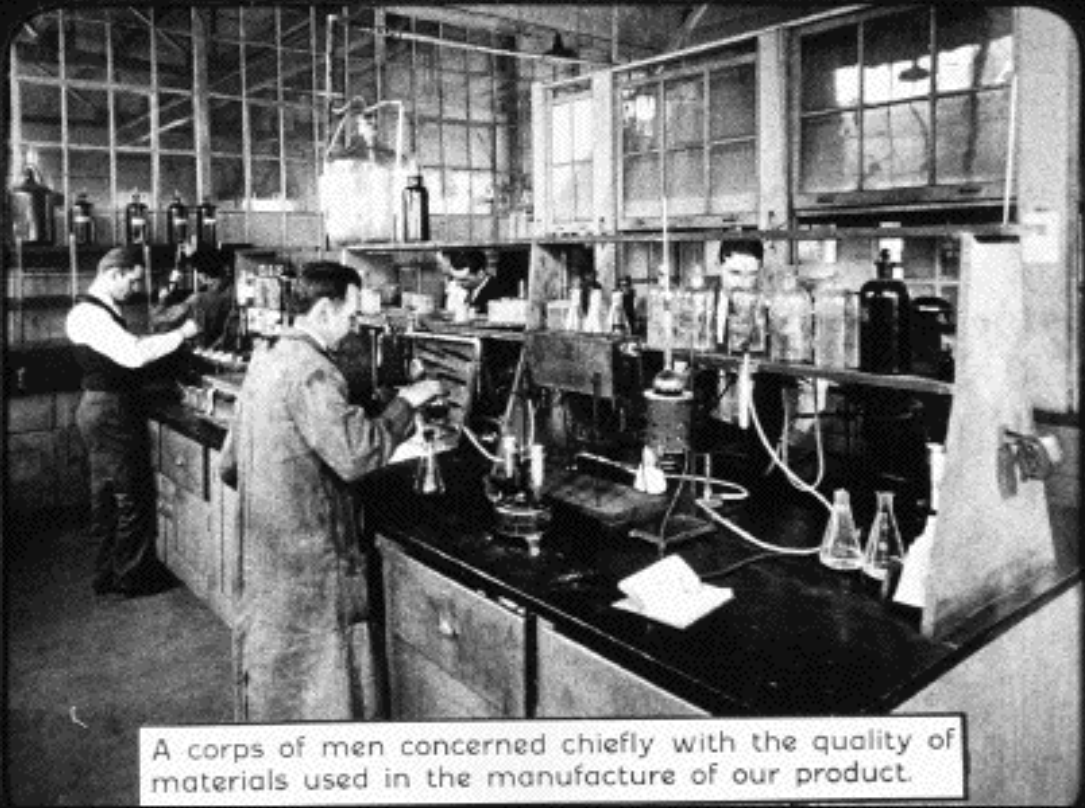
Assembled March 2001 by Spence Fowler
(member #4536)
sdf@att.net

Safeguarding the QUALITY of WILLYS-OVERLAND PRODUCTS

Retail Sales Manager's Film Service

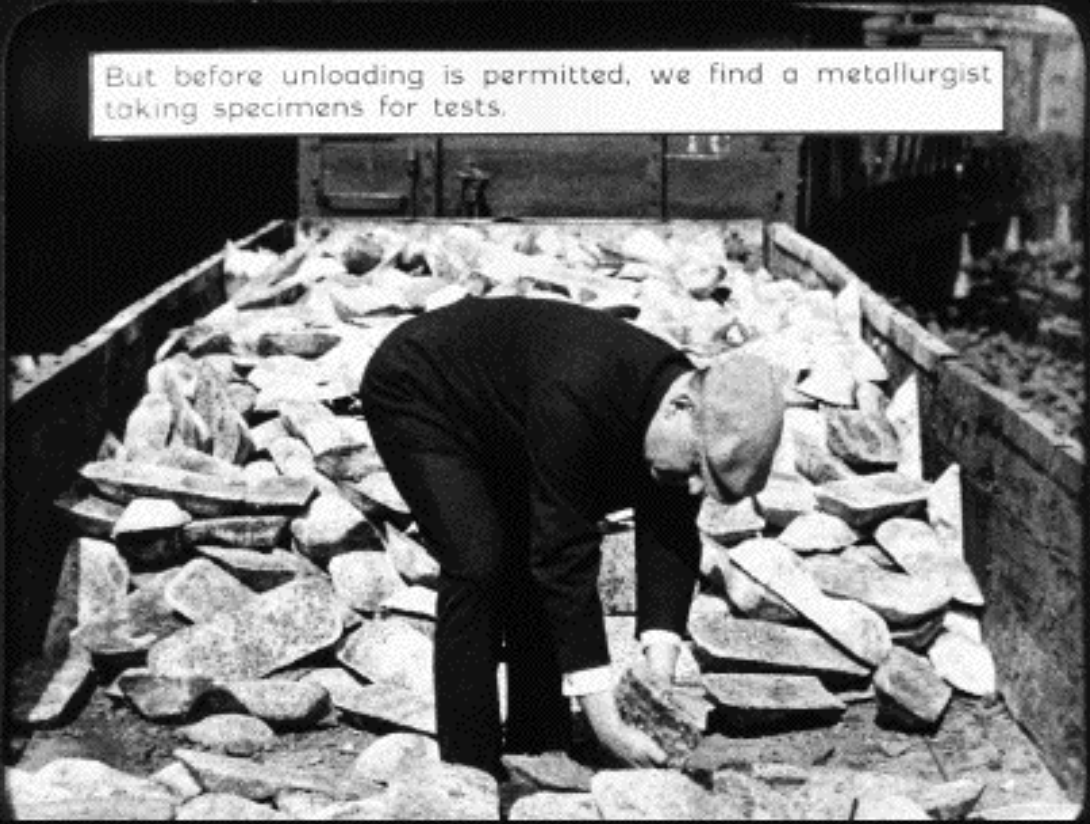
Behind the lines, supporting the army of salesmen in the field and insuring full value for every customer's dollar we find a combination of brains, brawn and steel producing ENGINEERING LEADERSHIP in Willys-Overland products.

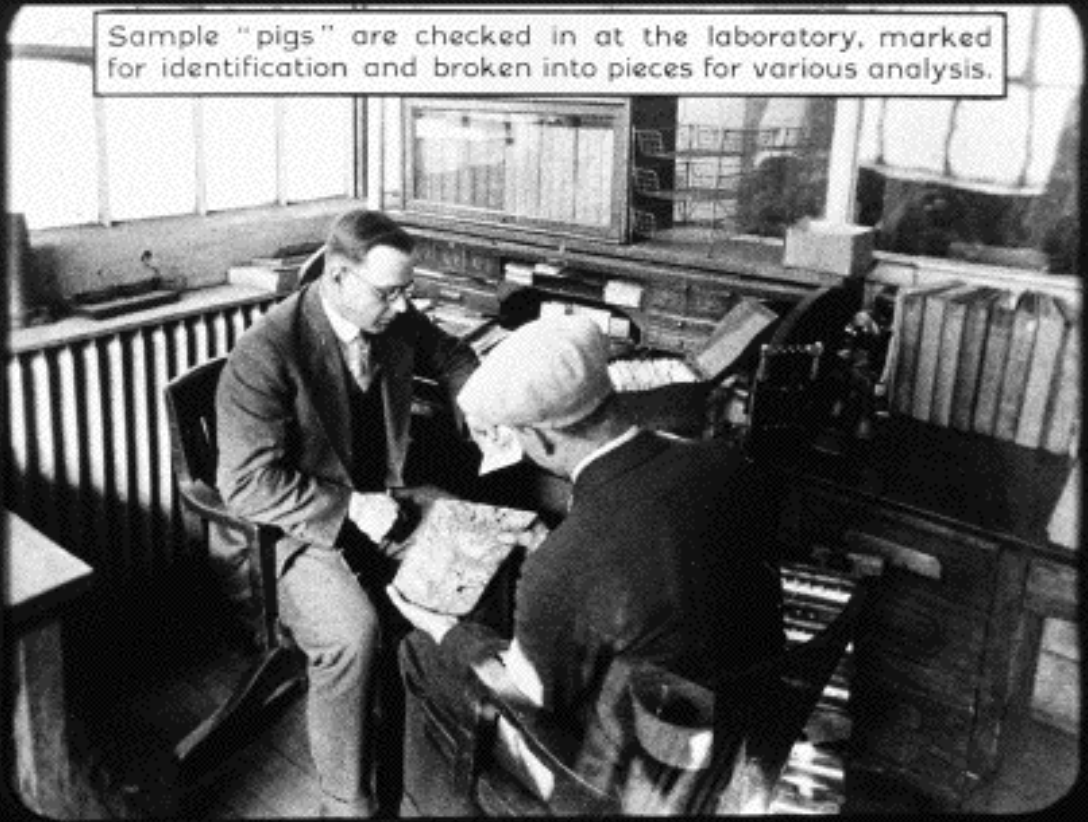

In the midst of this combination there stands a most necessary and important branch of production - -
THE METALLURGICAL LABORATORY - -



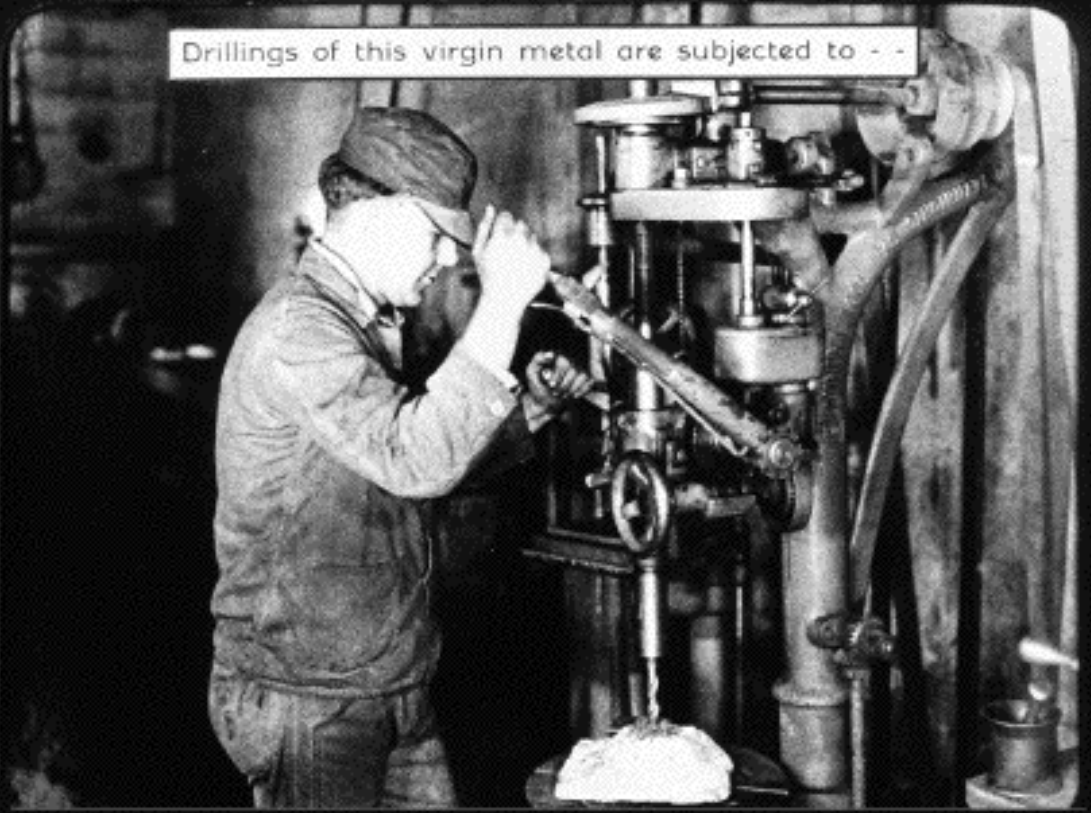
A corps of men concerned chiefly with the quality of materials used in the manufacture of our product.

As a train load of virgin metal, pig iron, arrives at the plant, it is checked by the receiving clerk.

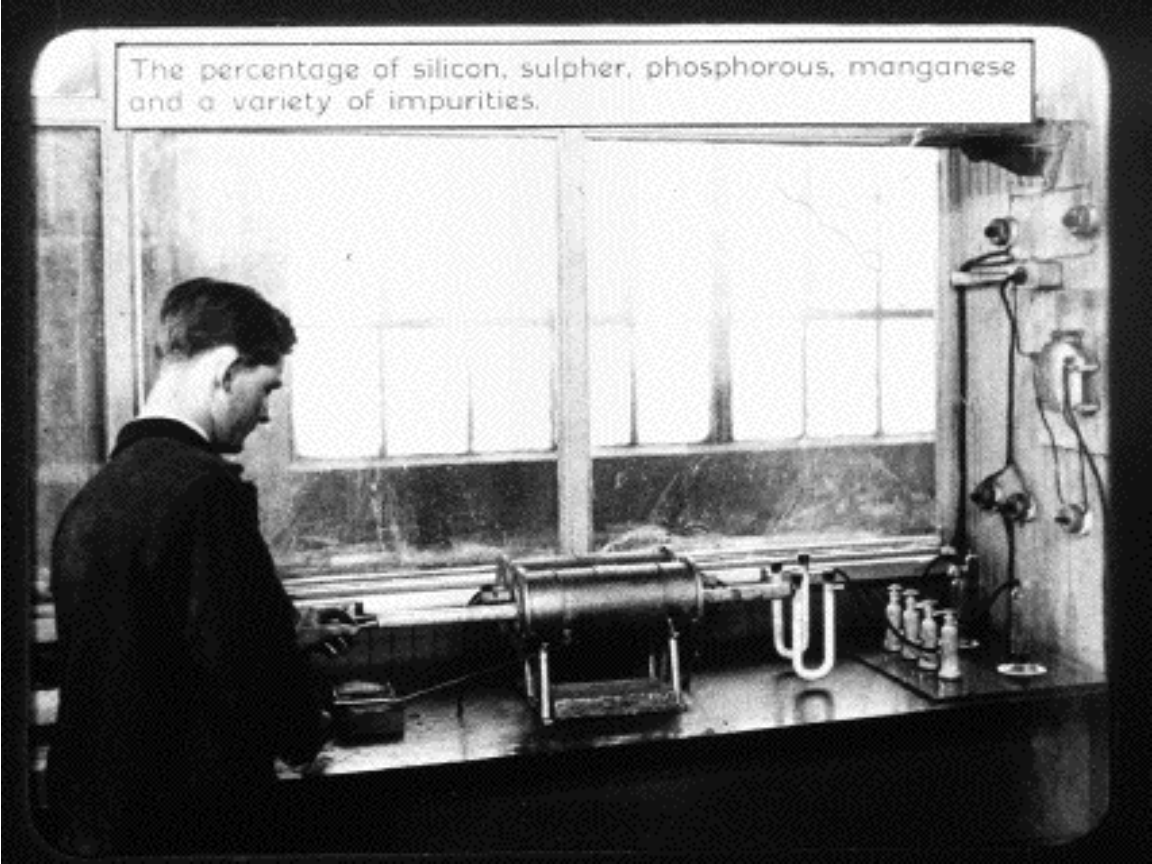

But before unloading is permitted, we find a metallurgist taking specimens for tests.

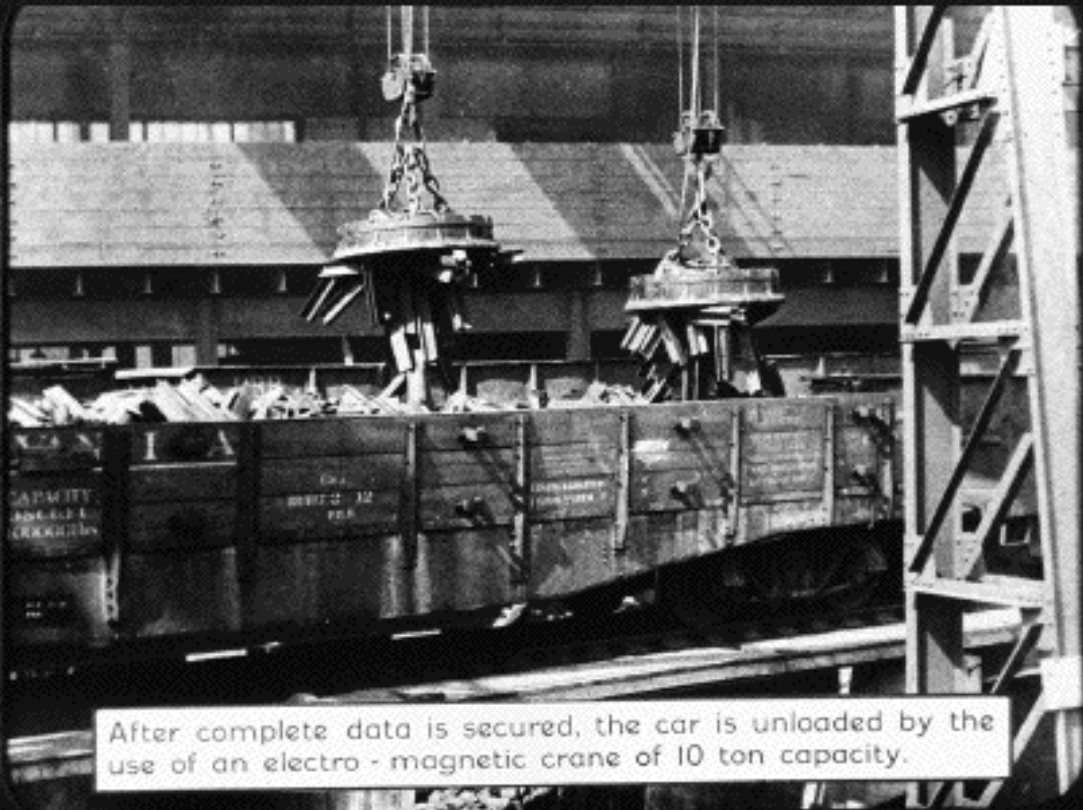


Sample "pigs" are checked in at the laboratory, marked for identification and broken into pieces for various analysis.


Drillings of this virgin metal are subjected to - -

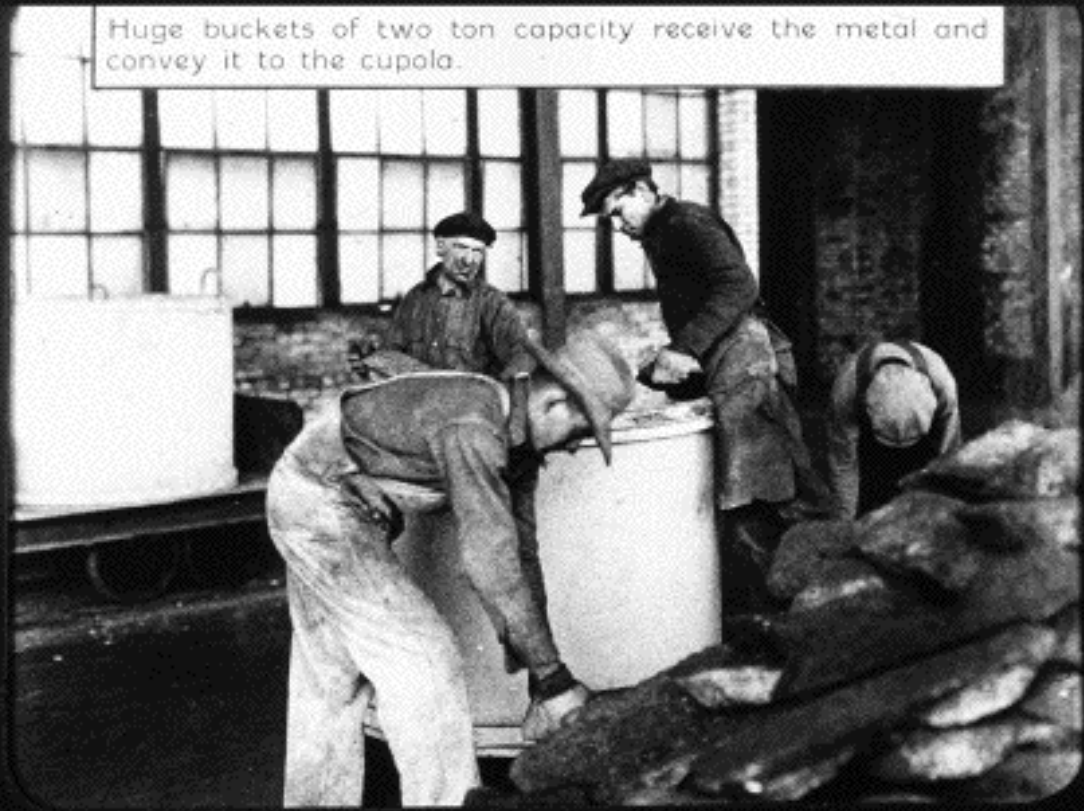
A series of acid tests, heat treatments, burning and other operations involving a mass of intricate, delicate and highly expensive apparatus. A complete chemical analysis of each specimen is made to determine the total carbon content —

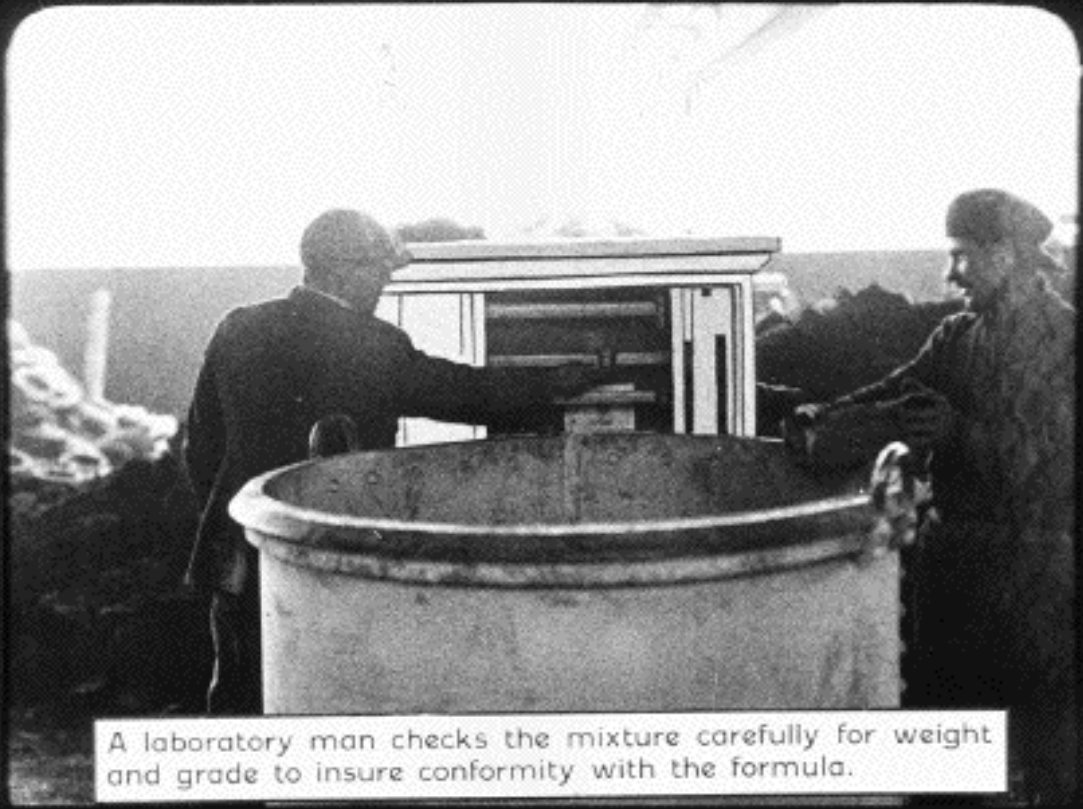

The percentage of silicon, sulpher, phosphorous, manganese and a variety of impurities.



After complete data is secured, the car is unloaded by the use of an electro - magnetic crane of 10 ton capacity.

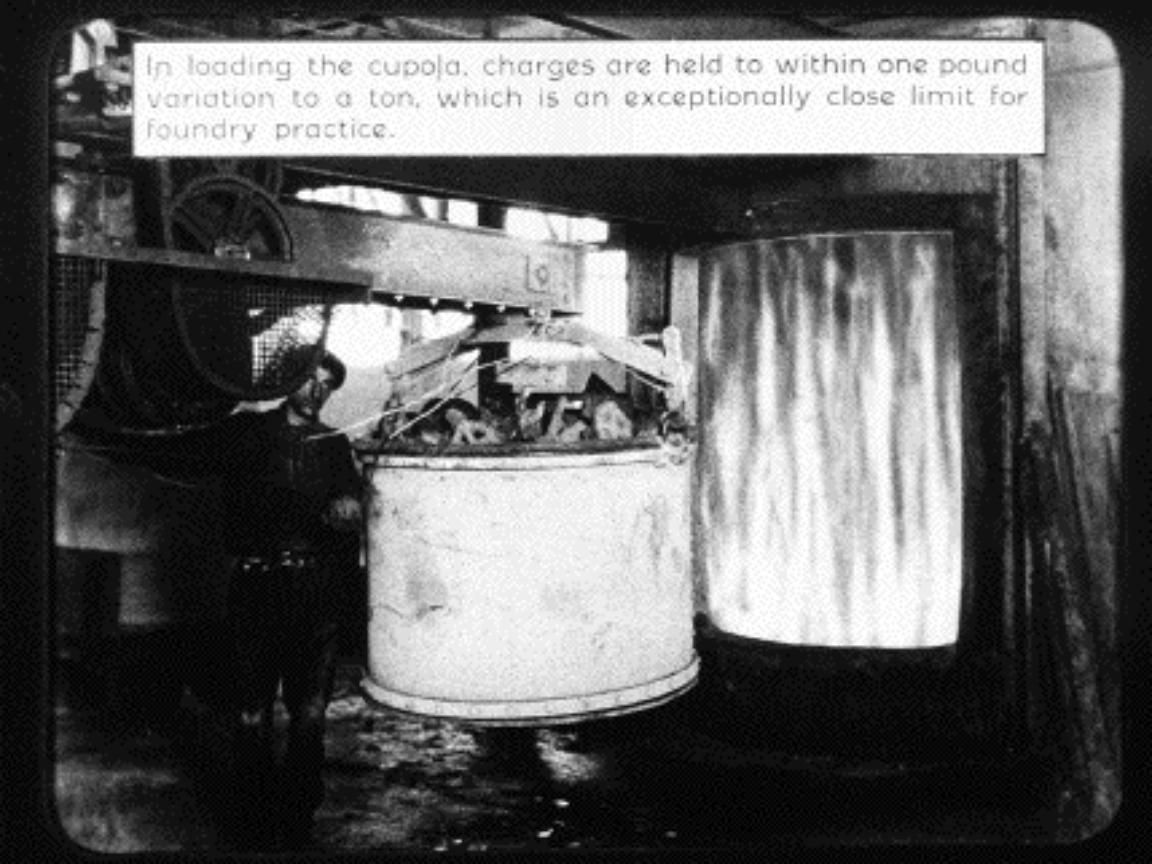
The location of that carload is noted and now with a record of the various elements contained in all the metal on hand the chemists work out a formula that will produce the particular quality of gray iron or semi-steel they require.

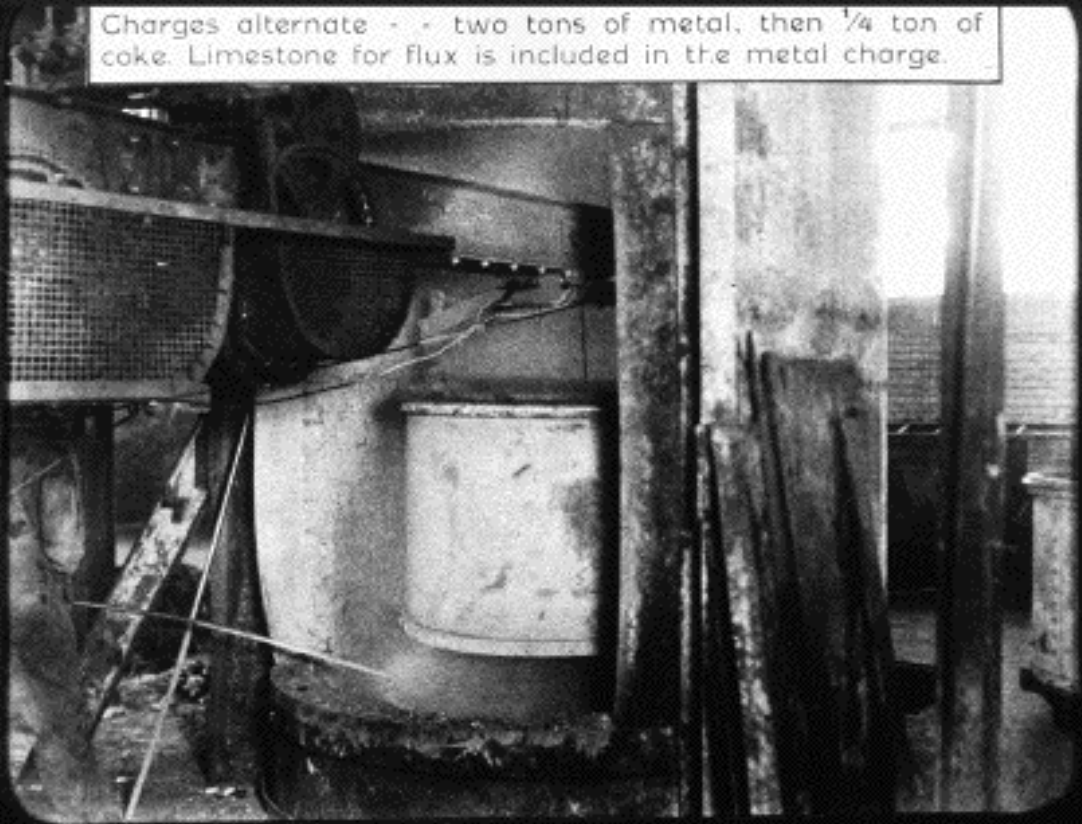

Huge buckets of two ton capacity receive the metal and convey it to the cupola.



A laboratory man checks the mixture carefully for weight and grade to insure conformity with the formula.

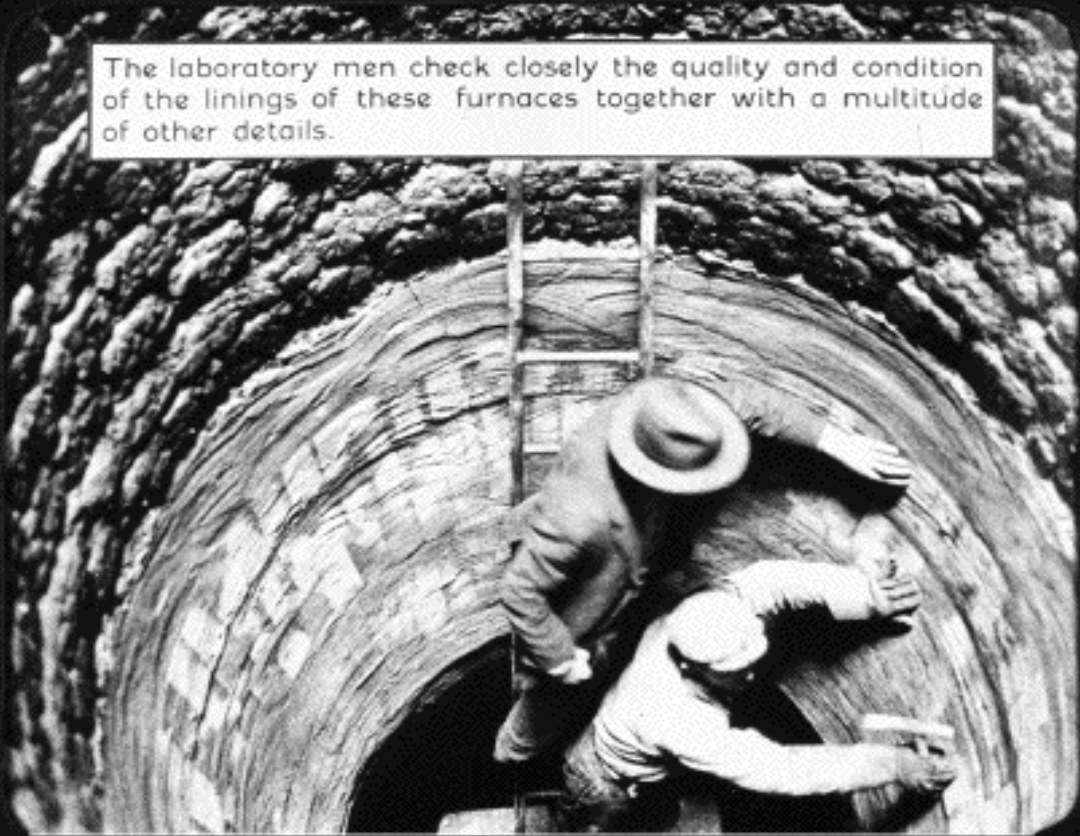
The formula for gray iron today may call for a ton of metal from bin No. 1, 800 lbs. from bin No. 2, and a quanity of limestone and fluorspar with every ¼ ton of coke. This formula may change daily as new virgin metal is received and analysed.


In loading the cupola, charges are held to within one pound variation to a ton, which is an exceptionally close limit for foundry practice.

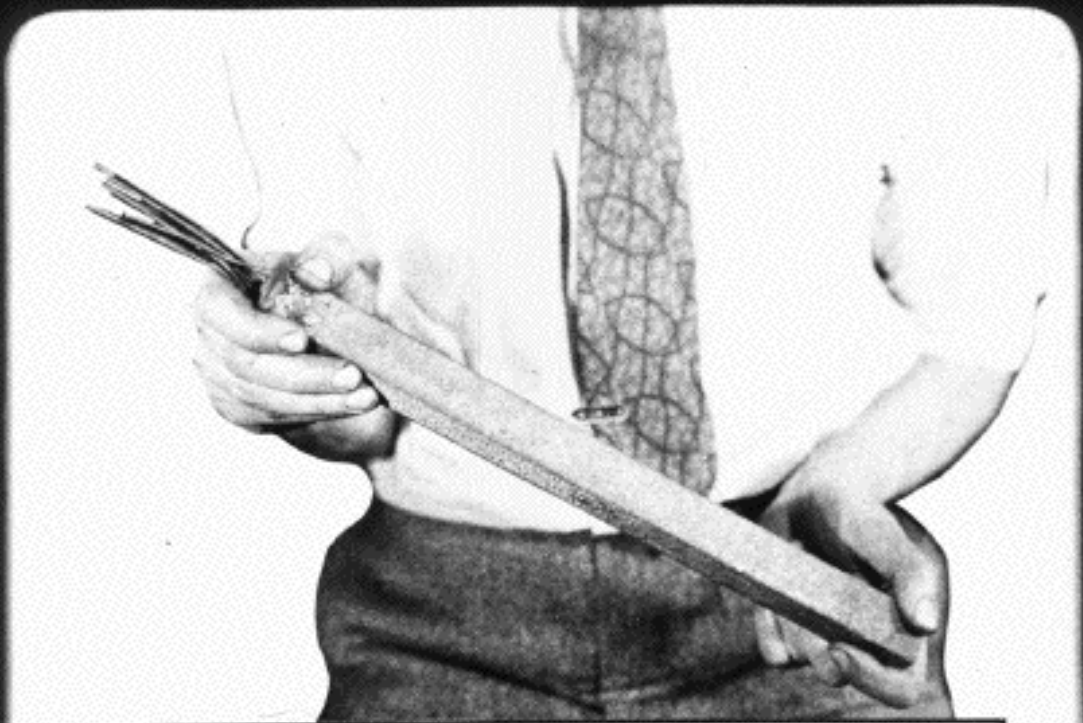

Charges alternate - - two tons of metal, then ¼ ton of coke. Limestone for flux is included in the metal charge.


From the bottom of some fifteen to twenty feet of roaring fire, flows a stream of molten gray iron.

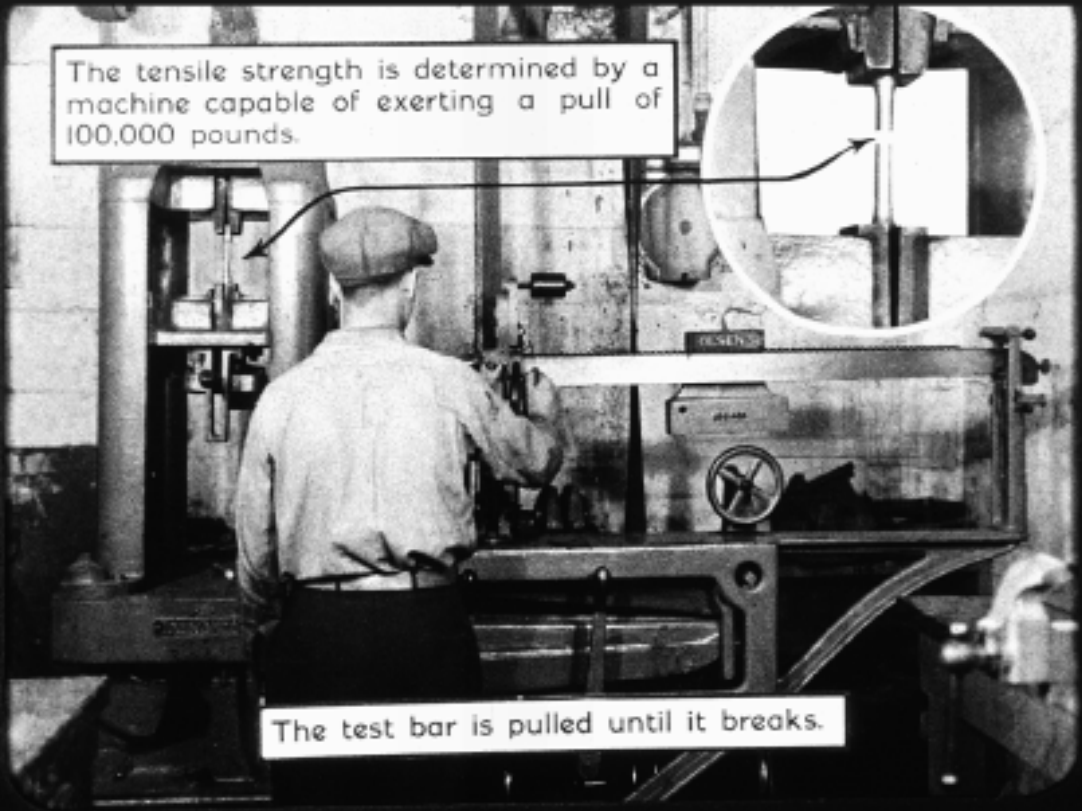
But the quality of that metal is dependent upon more than an analysis of the virgin metal stock. The coke, limestone and fluor-spar are analysed — the volume and pressure of air blown into the furnace is computed.


The laboratory men check closely the quality and condition of the linings of these furnaces together with a multitude of other details.

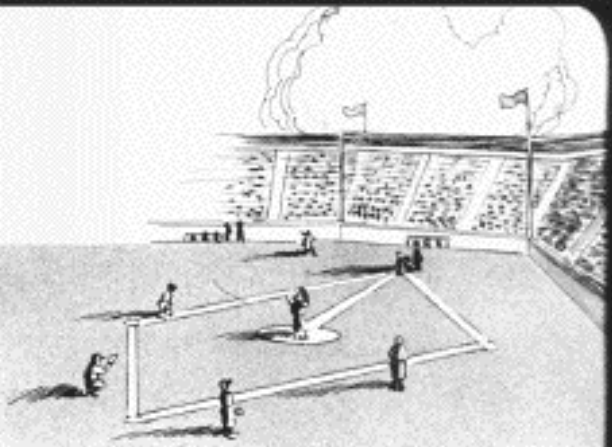
Not satisfied with this accurate checking before smelting, we find them taking a test bar of the molten metal every hour.



This test bar of finished metal is subjected to another series of tests for chemical analysis and physical properties.


The tensile strength is determined by a machine capable of exerting a pull of 100,000 pounds.
The test bar is pulled until it breaks.

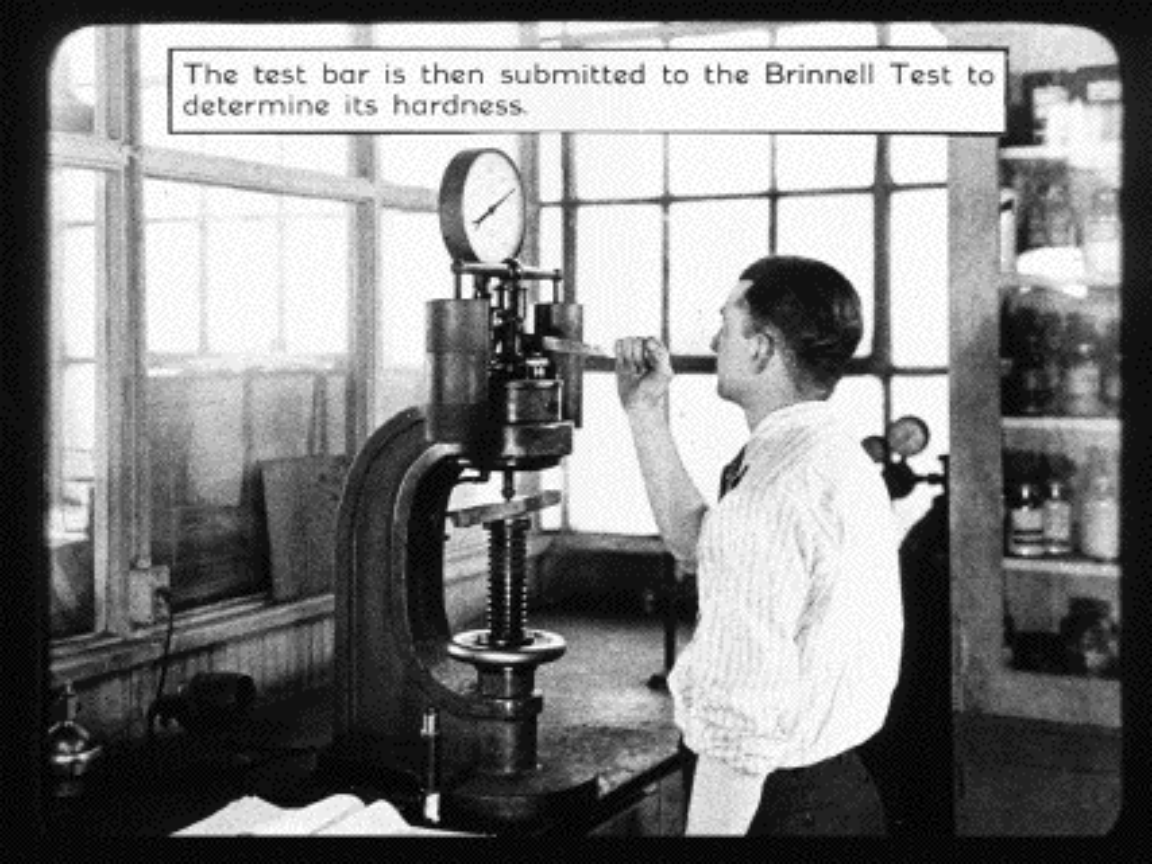

The texture is examined under a powerful microscope enlarging the surface 1,000 diameters, showing in minute detail the structure of each particle.

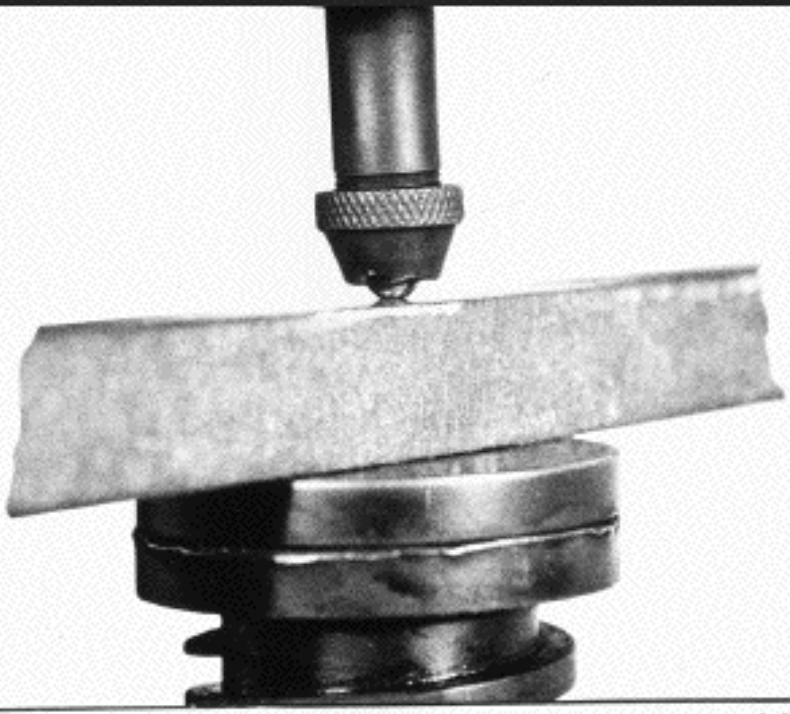


An increase in area of 1,000 diameters is equivalent to enlarging the surface of a quarter to the size of a baseball diamond.

This microscopic view of the virgin metal before smelting reveals many undesirable elements.


Whereas the finished metal is of high quality and fine texture.

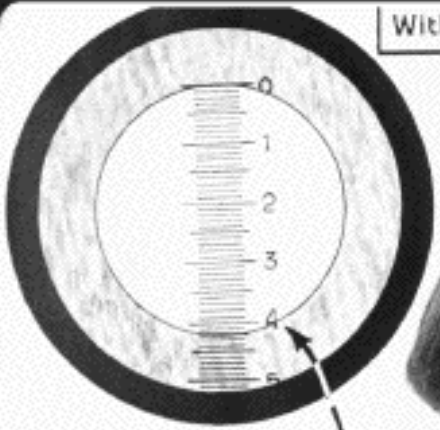

The test bar is then submitted to the Brinnell Test to determine its hardness.



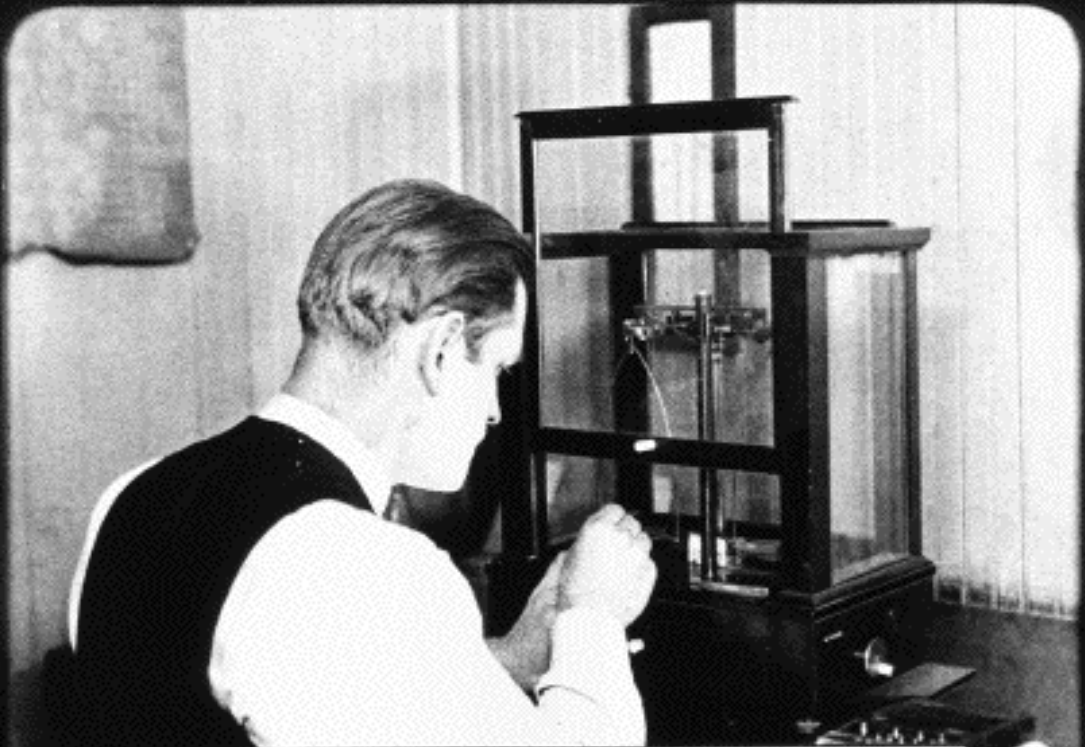
A certain standard pressure is exerted against a steel ball so that it leaves an indentation in the test bar.

The diameter of this indentation is measured - -

With a microscopic rule.

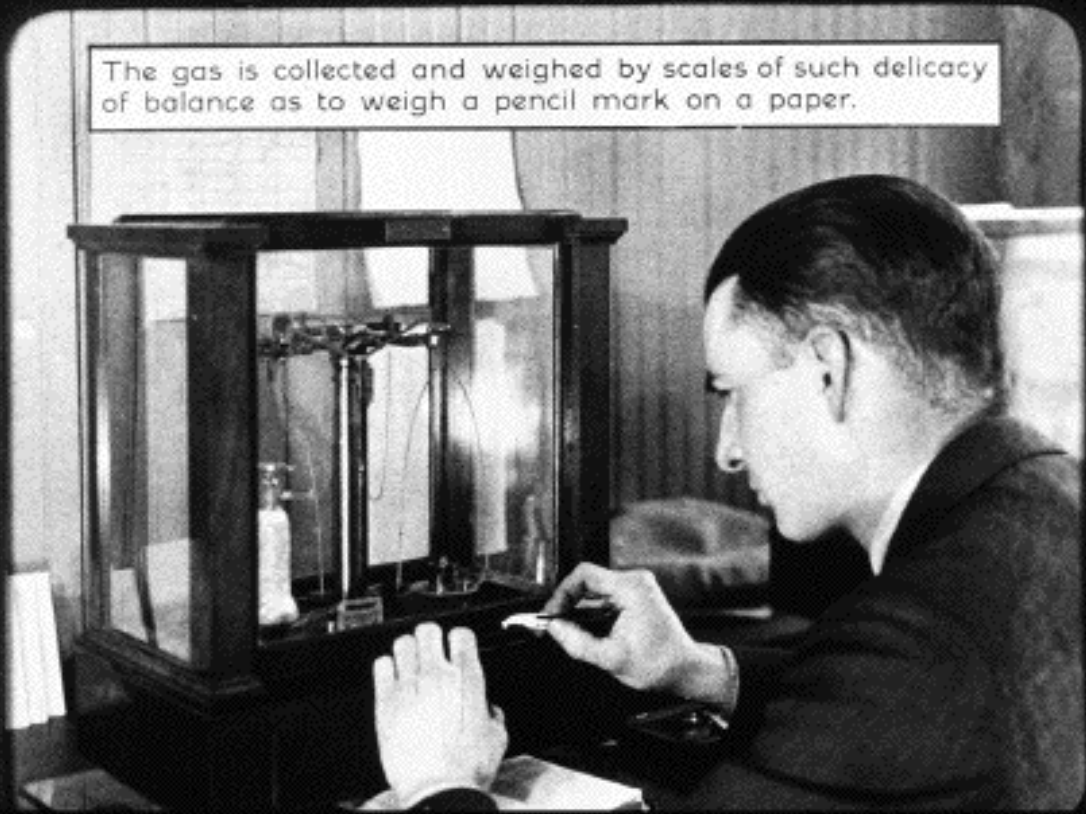


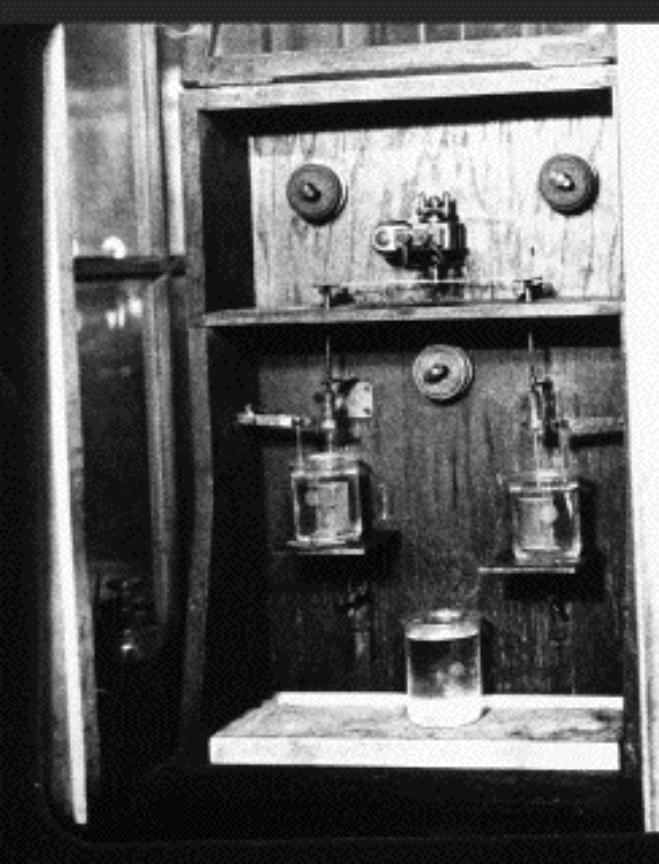
Should the metal be soft, the ball would sink deeper and the diameter of the indentation would therefore be larger than standard.



In the test for carbon, a small quantity of drillings or filings from the bar is carefully weighed - -

Placed in a furnace under terrific heat (1900° F) until it is burned to an ash.

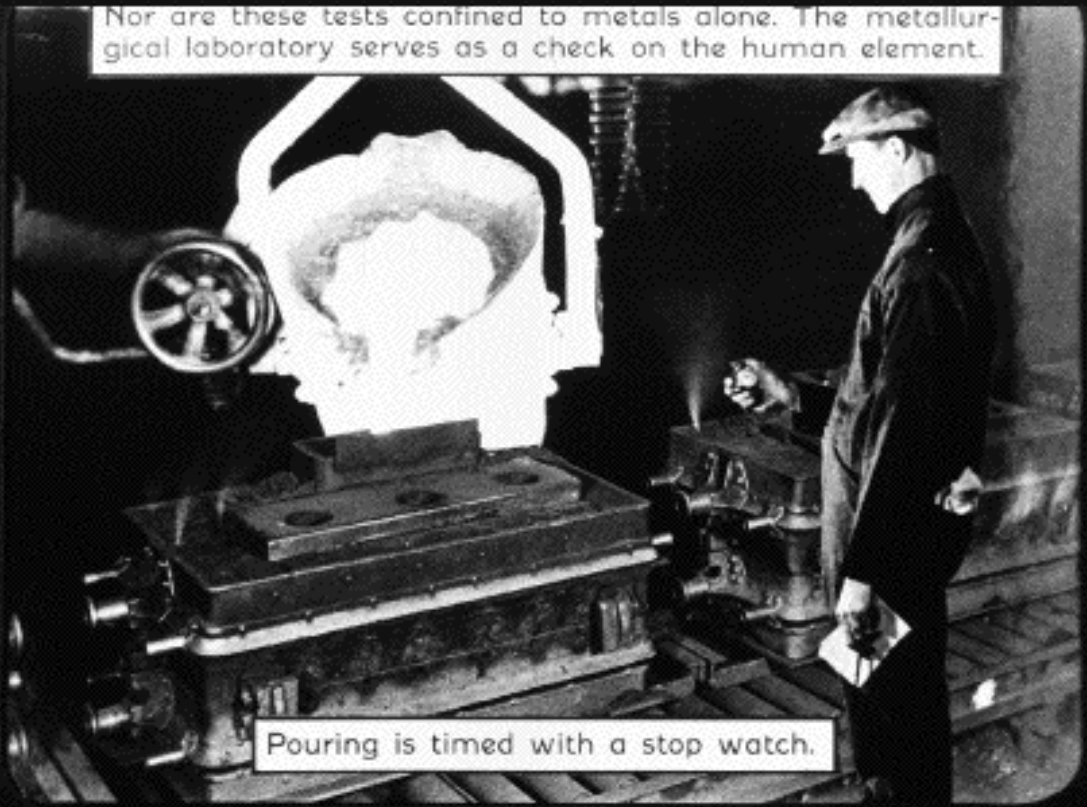

The gas is collected and weighed by scales of such delicacy of balance as to weigh a pencil mark on a paper.

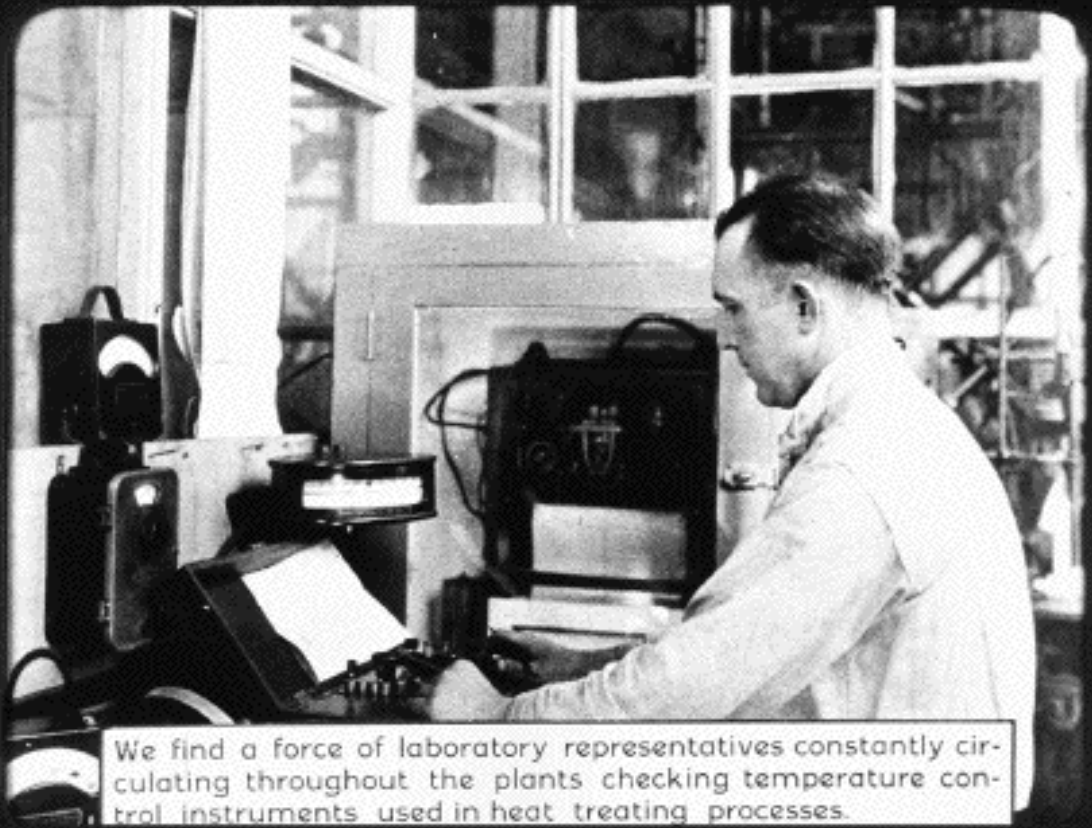


The content of copper in a given piece of metal is determined by an electroplating process.

Then comes the Rockwell Test and a variety of other tests for certain characteristics necessary to the quality of the metal used in the production of an iron motor block, aluminum crank-case or babbit bearing. Hour after hour throughout the production period this continuous process of analysis

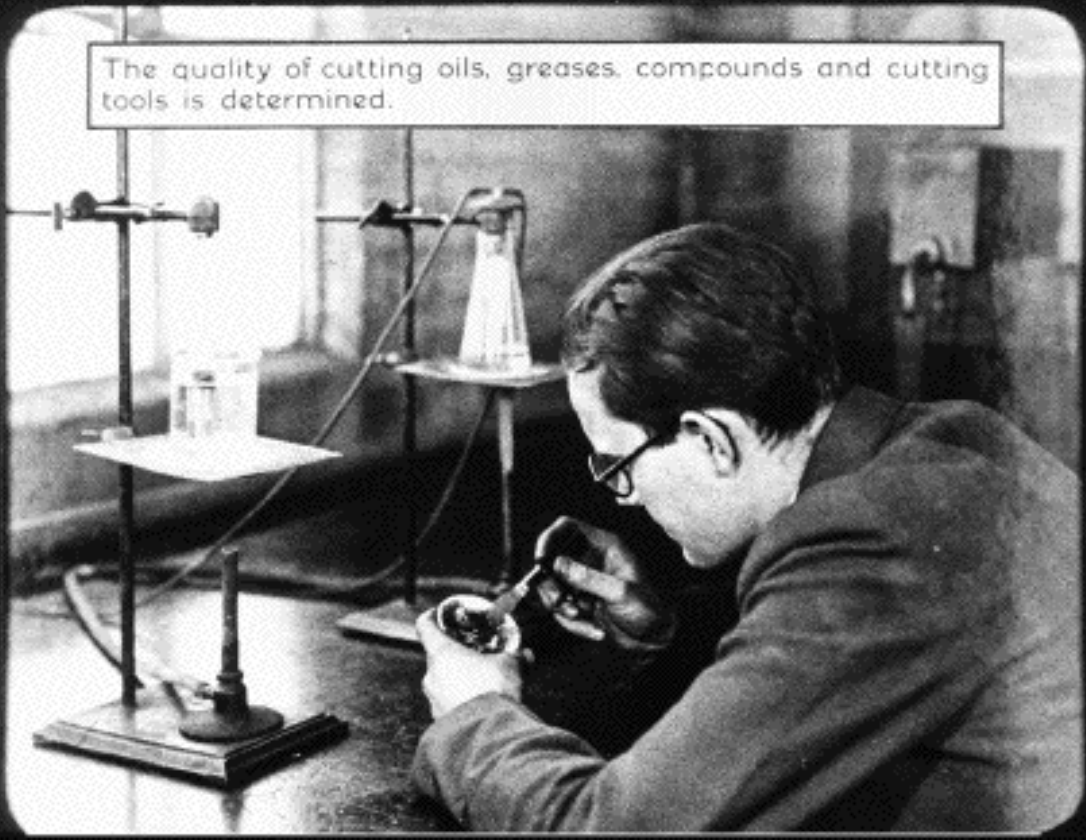
SAFEGUARDS QUALITY.


Nor are these tests confined to metals alone. The metallurgical laboratory serves as a check on the human element.
Pouring is timed with a stop watch.

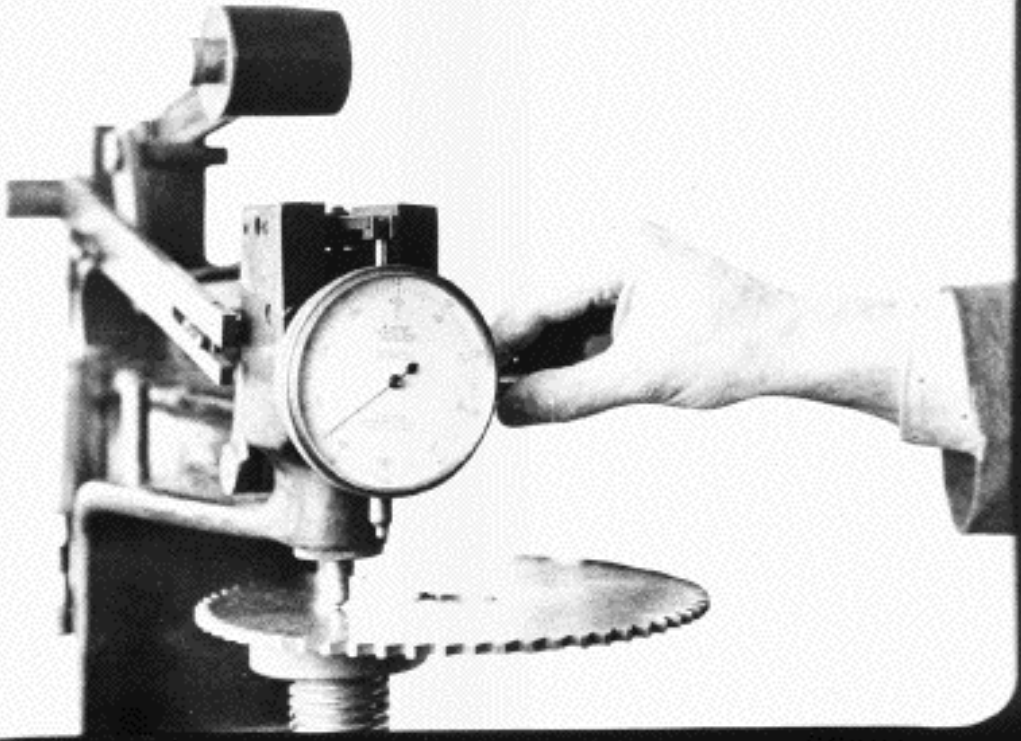


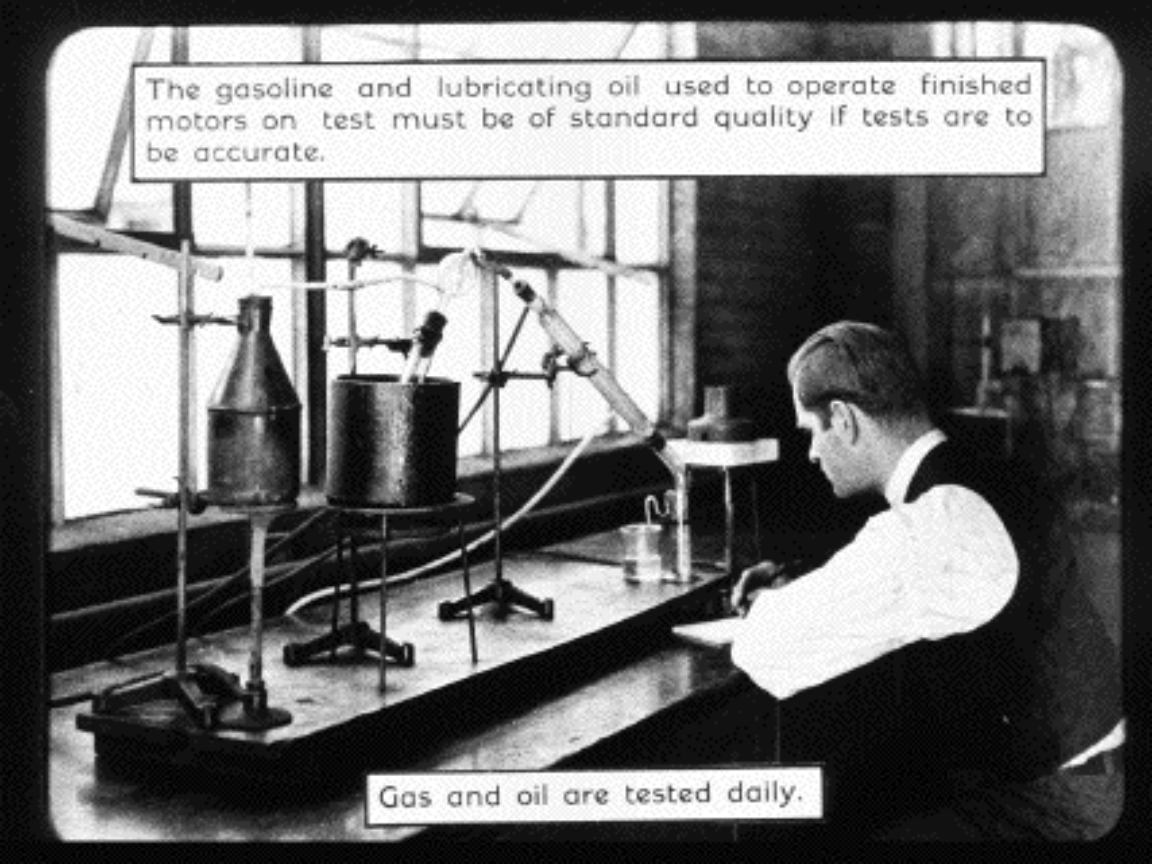
We find a force of laboratory representatives constantly circulating throughout the plants checking temperature control instruments used in heat treating processes.


All fuel oil for heat treating is analysed and proper specifications maintained.

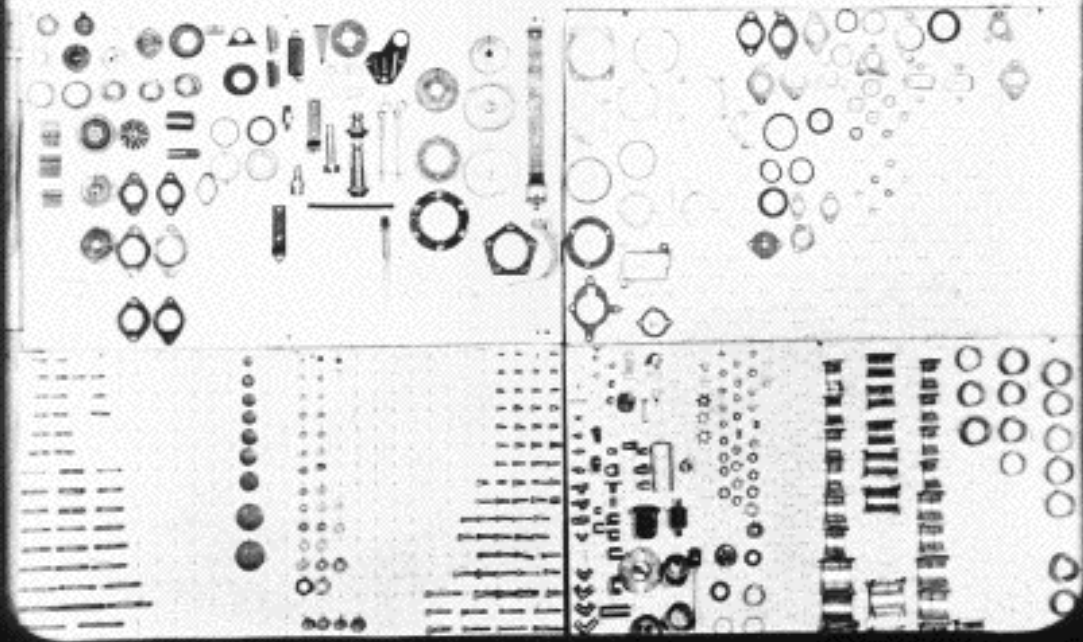

The quality of cutting oils, greases, compounds and cutting tools is determined.

All steel for tool making purposes is checked and analysed.

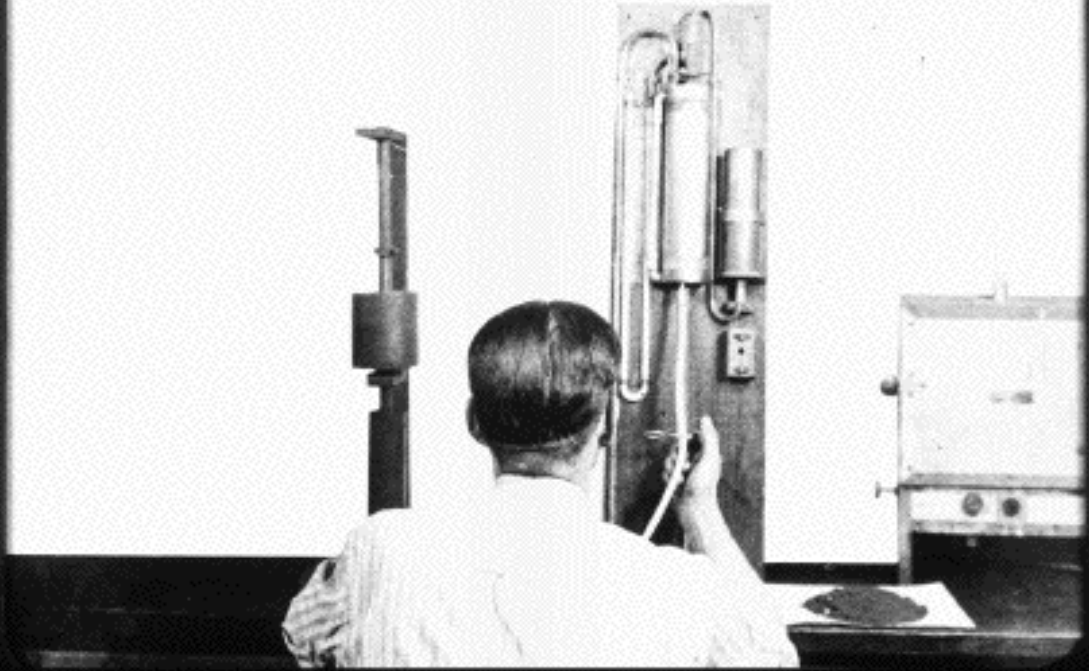


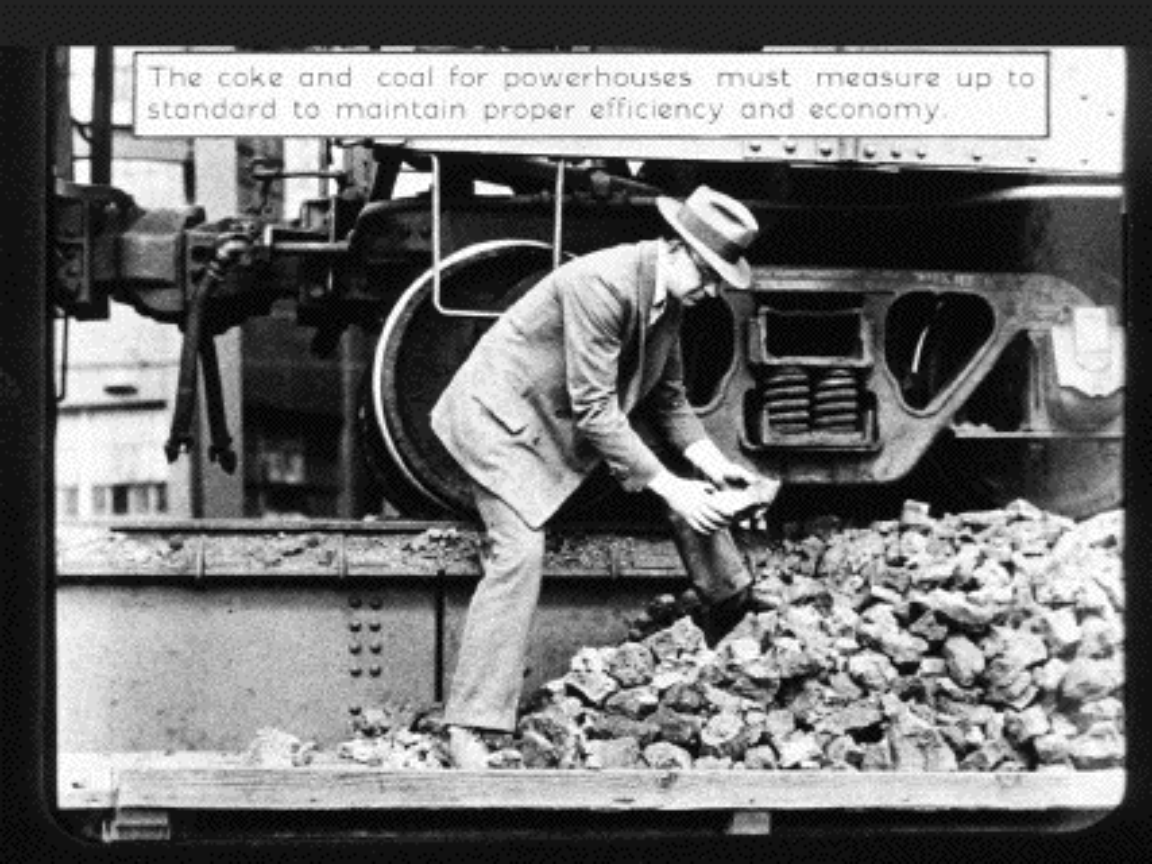

The gasoline and lubricating oil used to operate finished motors on test must be of standard quality if tests are to be accurate.
Gas and oil are tested daily.

Gasket material, felt, cork, asbestos, paper, in fact every type of material that goes into the building of a motor must meet the quality standards.

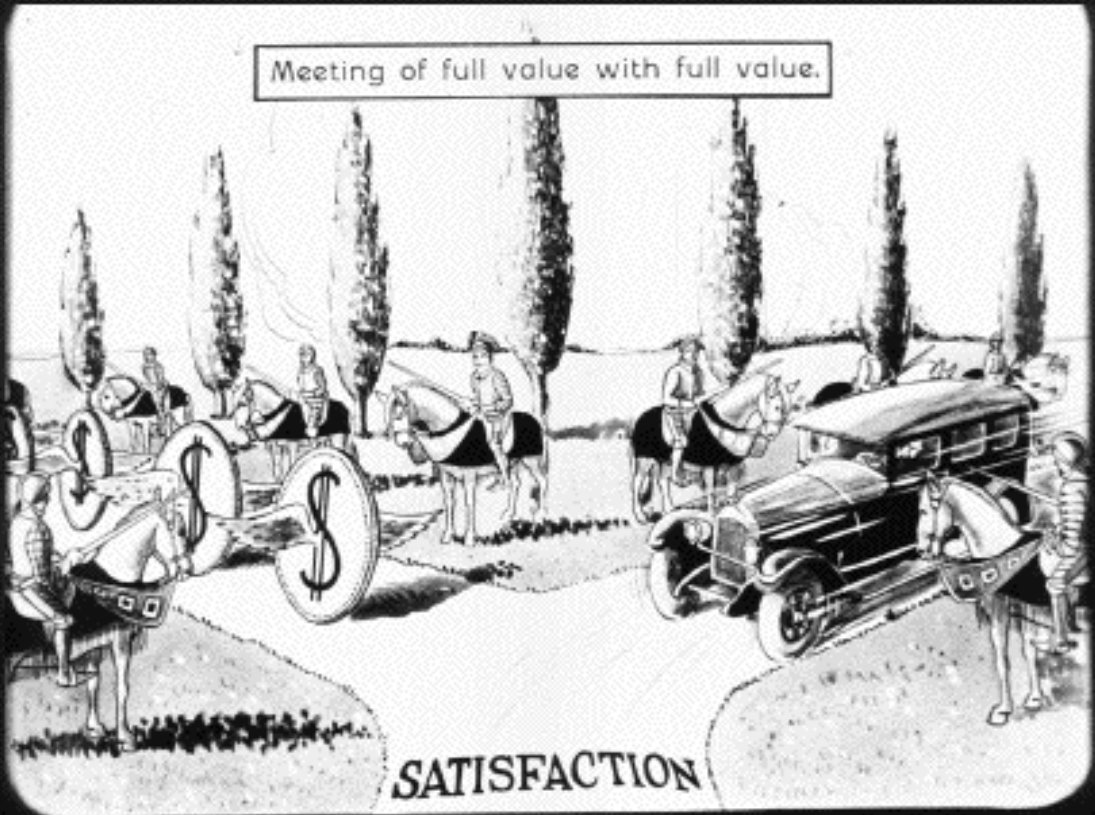


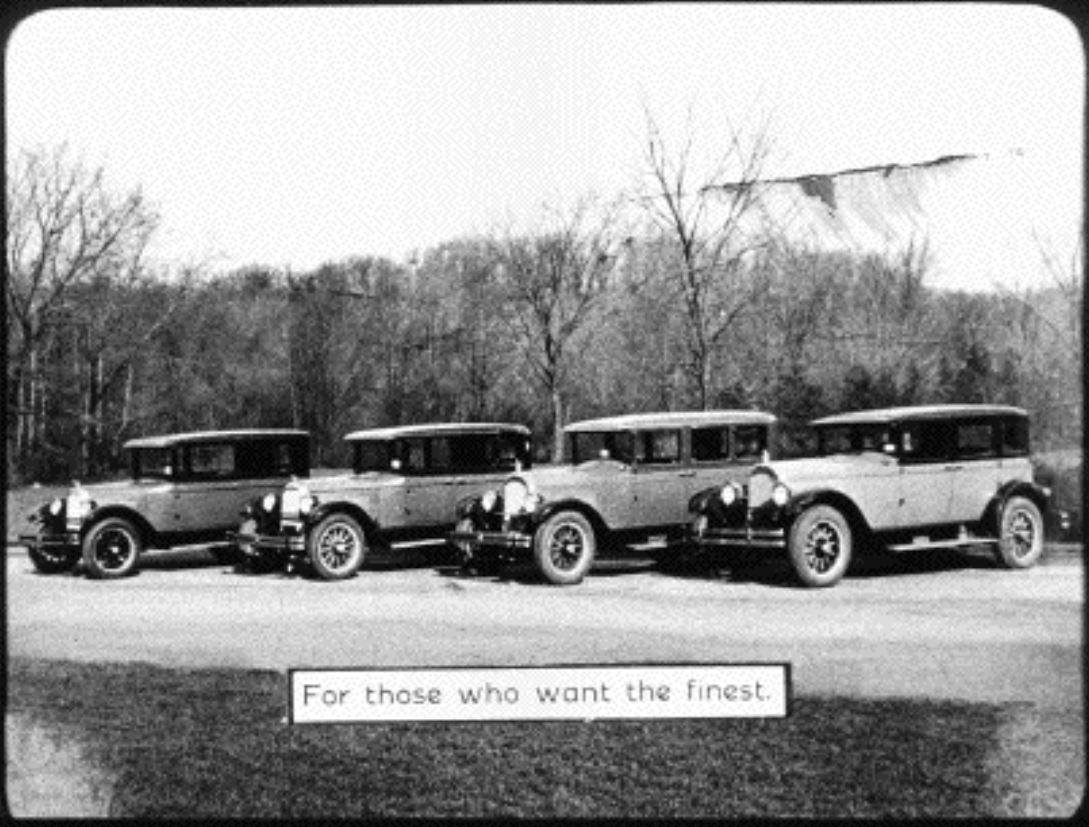
The sand used in making molds for castings must be of a certain quality.




The coke and coal for powerhouses must measure up to standard to maintain proper efficiency and economy.

Thus do these modern crusaders of the laboratory safeguard the interests of both manufacturer and consumer, maintain quality, preserve good will and insure satisfaction through the —


Meeting of full value with full value.
SATISFACTION


For those who want the finest.


End