H&M Thermometers

for Steam Generating Plants

The H&M Division
Taylor Instrument Companies
Rochester, N.Y.

Section 1

Thermometers and Gauges for

Steam Generating Plants

In Power Houses, Manufacturing Plants, Marine Steam Engineering, Heating and Ventilating, Etc.

The H&M Division
Taylor Instrument Companies
Rochester, N.Y.

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BANK OF METROPOLIS BLDG.
BROADWAY AND 16TH ST.

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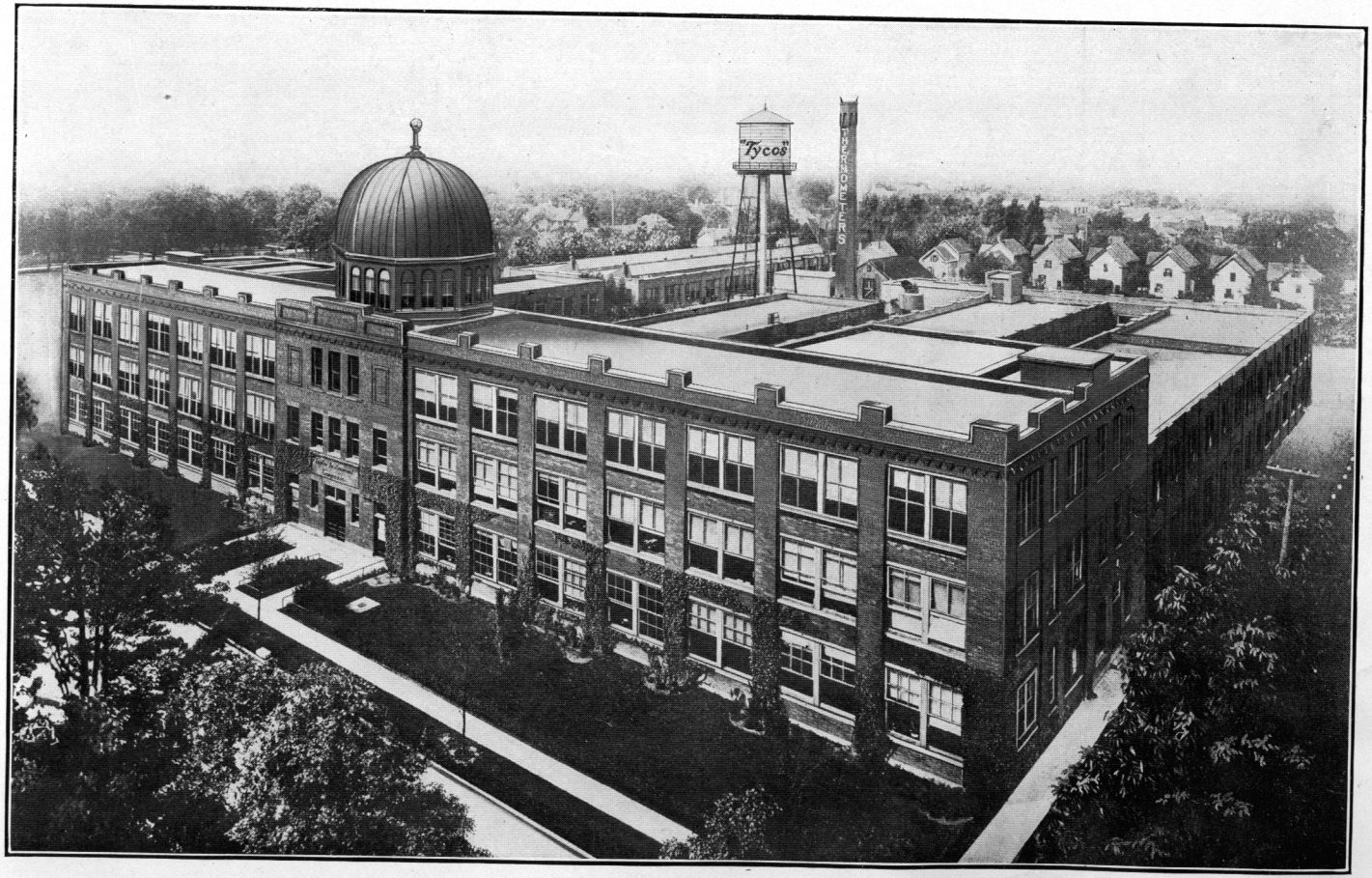


The Largest Plant of its Kind in the World

Home of H&M *Tycos* Thermometers

Explanatory

THE underlying principle in the development of H&M Thermometers is their Adaptation to Specific Requirements.

The intelligent pursuit of this principle in connection with Thermometer construction not only necessitates constant and painstaking investigation, but also familiarity with manufacturing processes and industrial development. The wide experience gained in the course of over half a century and a highly specialized manufacturing plant, enable us to design and produce the most practical and reliable instruments for any purpose.

The various H&M Steam Plant Thermometers listed in this Section are special adaptations of standardized Forms, fully described in General Section of this Catalog. They are universally used, and therefore of demonstrated practical design. However, for requirements not covered by the above, or for conditions necessitating other Forms of instruments, etc., we refer to lists and illustrations in General Section.

The H&M Division
Taylor Instrument Companies
Rochester, N.Y.

"Where *Tycos* Thermometers Come From"

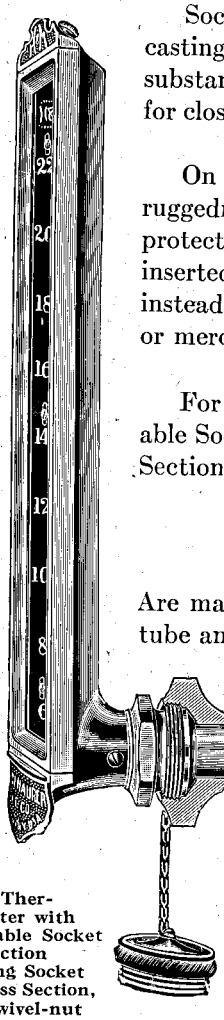
Branches

New York
Boston
Chicago
Washington, D. C.
Philadelphia
Toronto
St. Louis

Feed Water Thermometers

With Separable Socket Connection

The H&M Separable Socket Connection is the most desirable form for attaching thermometers to Feed Water lines, Heaters, Economizers, Condensers, Steam Pipes, etc.



Angle Thermometer with Separable Socket Connection showing Socket in Cross Section, also Swivel-nut of Union and perfect contact taper Bulb Chamber

Sockets are machined from high-grade bronze castings, threaded for 1-inch pipe, with wrench-head of substantial proportions and each provided with cap for closing aperture when thermometer is not in place.

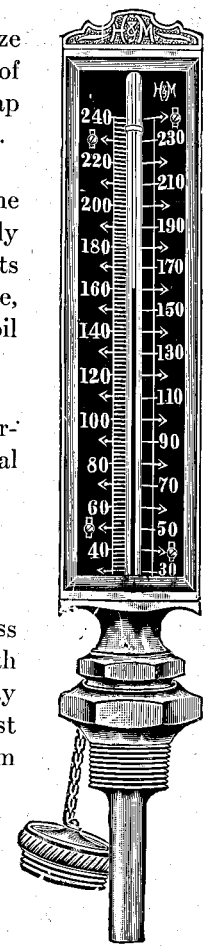
On account of these practical features and the ruggedness of the thermometer with its thoroughly protected bulb, many steam plants have extra sockets inserted in locations where occasional tests are made, instead of the unsatisfactory steel wells filled with oil or mercury for use with bare glass thermometers.

For further description and illustrations of Separable Socket connections, see pages 40 and 41 of General Section.

All H&M Thermometers

Are made with safety chamber blown in top of glass tube and with space above mercury column filled with an inert gas under pressure. The safety chamber is effective protection against bursting of the bulb from slight overheating, due to steam backing into feed-lines through defective check valves.

The gas filling prevents distillation of the mercury, which, in ordinary thermometers, causes so-called scattering of the column, rendering them useless under constant service.



Straight Feed Water Thermometer with Separable Socket Connection

FOR STEAM GENERATING PLANTS

Feed Water Thermometers

With Separable Socket Connection

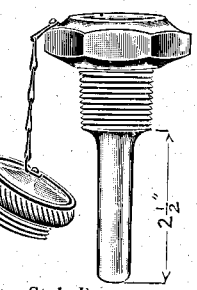
Socket threaded for 1-inch Pipe

Approximate range of scale 40°—240° Fahrenheit.

		EACH
No. 1	Straight Feed Water Thermometer. With 12-inch scale and Standard Stem length socket. (See notes below).	$26.25
No. 2	Straight Feed Water Thermometer. Same as No. 1 but with 9-inch scale.	22.50
No. 3	Angle Feed Water Thermometer. With 12-inch scale and Standard length Stem socket. (See notes below).	30.00
No. 4	Angle Feed Water Thermometer. Same as No. 3 but with 9-inch scale.	26.25

Nos. 1 and 3 will be furnished with Socket D1; and Nos. 2 and 4 with Socket D, unless otherwise specified.

Without extra charge, we will furnish Nos. 1, 2, 3, and 4 with Socket D2 or D3 if so specified on order.

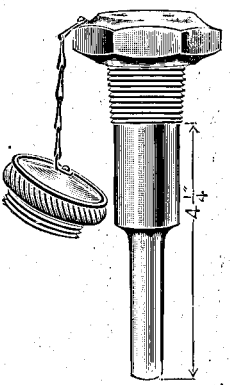


Style D
Bulb-stem Form
—for 9-inch Scale

Greater Length Stems

See pages 40 and 41 General Section for Standard Form Separable Sockets with extension.

	EACH
Nos. 1, 2, 3 and 4 can be furnished with Extension-stem sockets D6 or D8 at addition to list of. Sockets exceeding 9 inches in over all length, must be made with thread 1¼-inch pipe size.	$3.75
For thermometers with stem of socket longer than standard lengths, for each additional 6 inches or fraction, add to list.	3.75



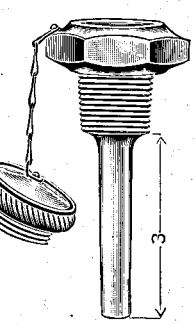
Style D2
Extension-stem
Form

Separable Sockets

Standard Length Stem Forms

The Sockets illustrated herewith are the Forms generally used. The Bulb-stem Forms D and D1 are for Feed-lines of small diameter. Socket D may be inserted into a 2-inch pipe, if a 2″ x 2″ x 1″ Tee is provided. For larger pipes D2 may be used, and when longer extension is desired, socket D6 with 7½″ stem.

For covered or insulated Feedwater lines, etc., socket D3 will prove convenient, and for large diameter pipes socket D8.

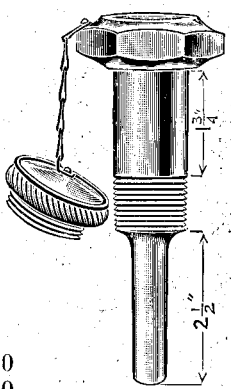


Style D1
Bulb-Stem Form
—for 12-inch Scale

Additional Sockets

When ordering specify affix number.

Extra Socket D	each $5.25	Extra Socket D3	each $6.00
Extra Socket D1	each 5.25	Extra Socket D6	each 7.50
Extra Socket D2	each 6.00	Extra Socket D8	each 7.50



Style D3
Extension-neck
Form

FOR STEAM GENERATING PLANTS

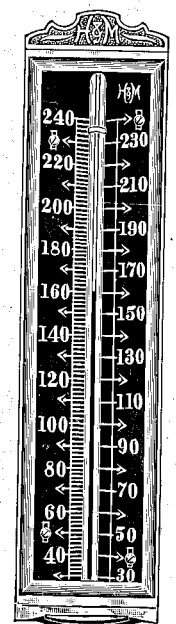
Feed Water Thermometers

Side Angle Forms
With Separable Socket Connection
Socket Threaded for 1-inch Pipe

Approximate range of scale 40°—240° Fahrenheit.

		EACH
No. 5	Right Side Angle Feed Water Thermometer. With 12-inch scale and Standard length Stem socket. (See notes below)	$30.00
No. 6	Right Side Angle Feed Water Thermometer. Same as No. 5 but with 9-inch scale.	26.25
No. 7	Left Side Angle Feed Water Thermometer. With 12-inch scale and Standard length Stem socket. (See note below)	30.00
No. 8	Left Side Angle Feed Water Thermometer. Same as No. 7 but with 9-inch scale.	26.25

See page 5 for description and illustrations of Standard length Separable Sockets.



Nos. 5 and 7 will be furnished with Socket D1, and Nos. 6 and 8 with Socket D, unless otherwise specified.

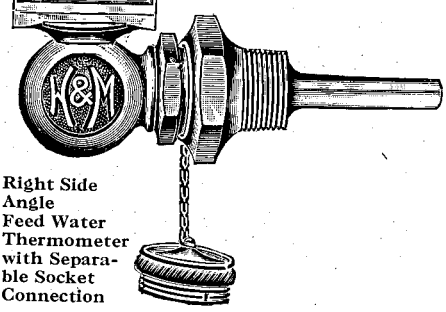
Without extra charge we will furnish Nos. 5, 6, 7 and 8 with Socket D2 or D3 if specified on order.

For greater length stems, see extras on page 5.

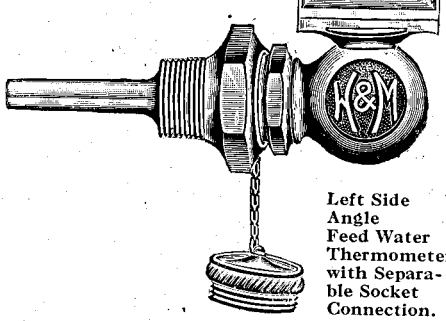
Angle Thermometers
With Modified Forms of Scale Cases

Cramped conditions are often unavoidable in the setting of steam generating apparatus, or it may be impractical to place thermometers in positions or locations easily accessible for convenient observation of the mercury column in regular form instruments. For conditions suggested it is desirable or necessary to use thermometers of modified construction.

The Side-Angle forms herewith illustrated and listed, cover a wide range of adaptations. For other forms of Side-Angles, also Angles with Inclined face or Reclining face of scale, see pages 60 and 62 of General Section.



Right Side Angle Feed Water Thermometer with Separable Socket Connection



Left Side Angle Feed Water Thermometer with Separable Socket Connection.

FOR STEAM GENERATING PLANTS

Condenser Thermometers

With Separable Socket Connection

Socket threaded for 1-inch Pipe

Approximate range of Scale 30°—160° Fahrenheit.

EACH

No. 14 Straight Condenser Thermometer..... $26.25
With 12-inch scale and Standard length Stem socket. (See notes below)

No. 15 Straight Condenser Thermometer..... 22.50
Same as No. 14, but with 9-inch scale.

No. 16 Angle Condenser Thermometer $30.00
With 12-inch scale and Standard length stem socket. (See notes below)

No. 17 Angle Condenser Thermometer 26.25
Same as No. 16 but with 9-inch scale.

Side-Angle Forms

See pages 60 and 62 General Section for illustrations and descriptions of other modified Forms.

No. 18 Right Side-angle Condenser Thermometer..... $30.00
With 12-inch scale and Standard length Stem socket. (See notes below.)

No. 19 Right Side-angle Condenser Thermometer..... 26.25
Same as No. 18 but with 9-inch scale.

No. 20 Left Side-angle Condenser Thermometer 30.00
With 12-inch scale and Standard length Stem socket. (See notes below.)

No. 21 Left Side-angle Condenser Thermometer 26.25
Same as No. 20 but with 9-inch scale.

Nos. 14, 16, 18 and 20 will be furnished with Socket D1, and Nos. 15, 17, 19 and 21 with Socket D, unless otherwise specified.

Without extra charge we will furnish Nos. 14 to 21 with socket D2 or D3 (see page 5), if so specified on order.

Economizer Thermometers

With Separable Socket Connection

Socket threaded for 1-inch Pipe

Approximate range of scale 50°—400° Fahrenheit.

EACH

No. 25 Straight Economizer Thermometer $26.25
With 12-inch scale and Socket D1 with 3-inch Bulb-stem.

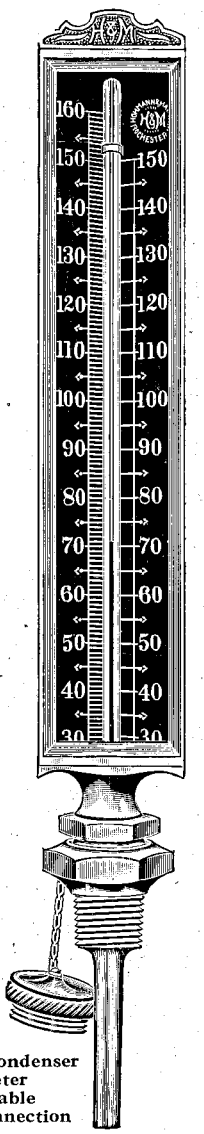
No. 26 Straight Economizer Thermometer..... 22.50
With 9-inch scale and Socket D with 2½-inch Bulb-stem.

No. 27 Angle Economizer Thermometer..... 30.00
With 12-inch scale and Socket D1 with 3-inch Bulb-stem.

No. 28 Angle Economizer Thermometer..... 26.25
With 9-inch scale and Socket D with 2½-inch Bulb-stem.

Nos. 25, 26, 27 and 28 will be furnished with Socket D2 or D3 (see page 5), in place of standard length, if so specified on order.

Nos. 27 and 28 will be furnished in Side-angle Form, either Right Side or Left Side-angle, if so specified on order.



Straight Condenser Thermometer with Separable Socket Connection

FOR STEAM GENERATING PLANTS

Superheated Steam Thermometers

With Separable Socket Connection

Socket threaded for 1-inch Pipe

The actual and possible economies obtained through superheating are so well recognized, that no steam generating plant can be considered complete without provision for this purpose. Satisfactory results, however, can be obtained only through proper control of temperatures.

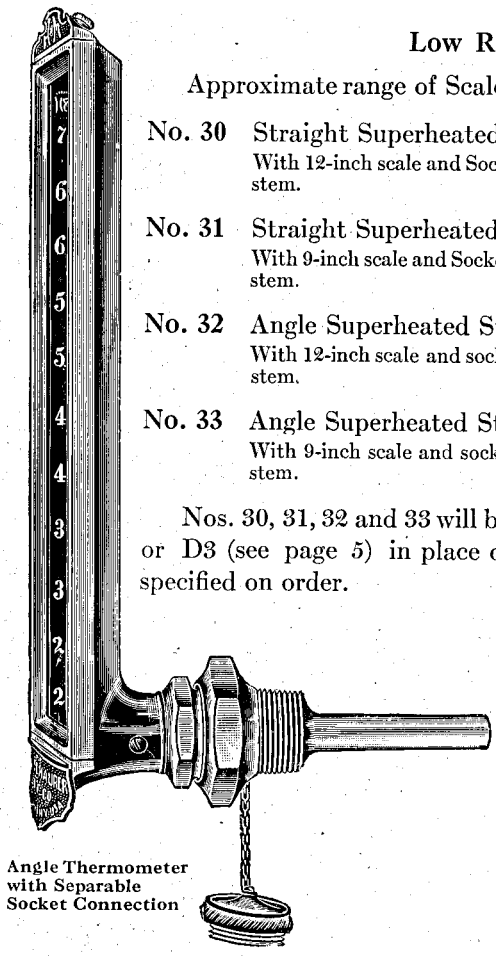
To meet the wide variations in operating conditions, superheated steam thermometers are made in three temperature ranges.

Low Range

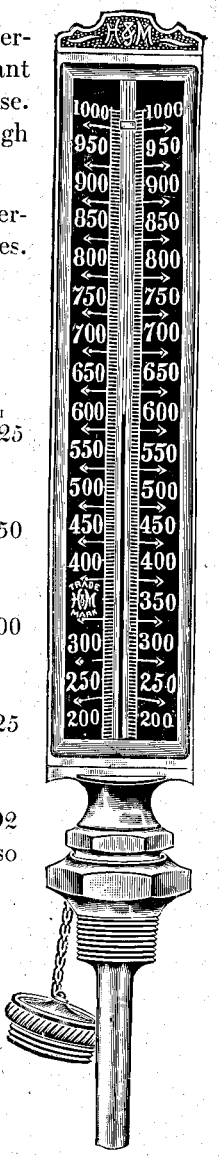
Approximate range of Scale 200° —750° Fahrenheit.

		EACH
No. 30	Straight Superheated Steam Thermo'ter With 12-inch scale and Socket D1 with 3-inch Bulb-stem.	$26.25
No. 31	Straight Superheated Steam Thermo'ter With 9-inch scale and Socket D with 2½-inch Bulb-stem.	22.50
No. 32	Angle Superheated Steam Thermometer With 12-inch scale and socket D1 with 3-inch Bulb-stem.	30.00
No. 33	Angle Superheated Steam Thermometer With 9-inch scale and socket D with 2½-inch Bulb-stem.	26.25

Nos. 30, 31, 32 and 33 will be furnished with Socket D2 or D3 (see page 5) in place of sockets D and D1 if so specified on order.



Angle Thermometer with Separable Socket Connection



Straight Superheated Steam Thermometer with Separable Socket Connection

Superheated Steam Thermometers

Intermediate Range

Approximate Range of Scale 100°—900° Fahrenheit.

EACH

No. 34 Straight Superheated Steam Thermometer..... $37.50
With 12-inch scale and Socket D1 with 3-inch Bulb-stem.

No. 35 Angle Superheated Steam Thermometer..... 41.25
With 12-inch scale and Socket D1 with 3-inch Bulb-stem.

Nos. 34 and 35 will be furnished with socket D2 or Socket D3 in place of Socket D1 if so specified on order.

As superheated steam pipes are generally covered or insulated, Socket D3 with extension above thread should be used. For large diameter pipes we recommend Socket D8 with longer stem and extension above thread for 3-inch covering.

EACH

No. 36 Straight Superheated Steam Thermometer... $41.25
With 12-inch scale and Socket D8 with 4⅜-inch stem.

No. 37 Angle Superheated Steam Thermometer..... 45.00
With 12-inch scale and Socket D8 with 4⅜-inch stem.

Nos. 36 and 37 will be furnished with Socket D8 threaded any distance below shoulder of wrench-head, if so specified on order.

High Range

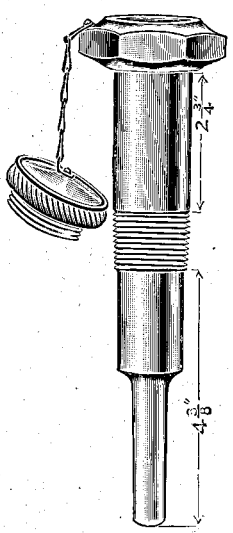
Approximate range of Scale 100°—1000° Fahrenheit.

EACH

No. 38 Straight Superheated Steam Thermometer... $45.75
With 12-inch scale and Socket D1 with 3-inch Bulb-stem.

No. 39 Angle Superheated Steam Thermometer..... 49.50
With 12-inch scale and Socket D1 with 3-inch Bulb-stem.

Nos. 38 and 39 will be furnished with Socket D2 or D3 in place of Socket D1, if so specified on order.



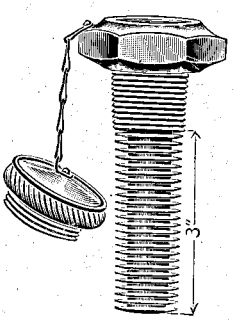
Style D 8
Combination-stem
Form

Multiple Disk Feature

It is generally known among steam engineers, although not always appreciated, that gases are poor heat conductors and consequently offer poor contact to the thermometer stem. Since superheated steam approaches the physical properties of gases, account should be taken of this fact when selecting an instrument if accurate temperature observations are desired.

The Multiple Disk feature illustrated herewith greatly increases the surface of the thermometer stem, thus securing a better contact.

For fitting Multiple Disk feature to any Socket, add to list $3.75



Style D 15
Multiple Disk
Bulb-stem Form

FOR STEAM GENERATING PLANTS

Thermo Steam Gauges

With Separable Socket Connection

Socket threaded for 1-inch Pipe

As shown by illustrations herewith, these thermometers are graduated for both temperature and pressure. It is conceded by steam engineers that this type of steam pressure gauge is the most reliable known for saturated steam. It may also be used to determine the degree of superheat by comparison with readings given by accurate Bourdon gauges. The pressure scale is based on Regnault's tables.

Thermo steam gauges are graduated for either low or high pressure.

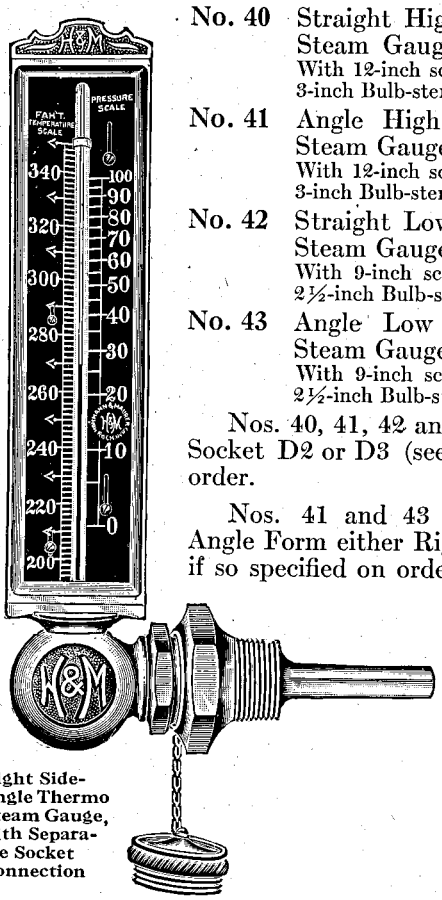
Approximate range of low pressure 200° to 350° Fahrenheit, 100 lbs. pressure.

Approximate range of high pressure 200° to 420° Fahrenheit, 300 lbs. pressure.

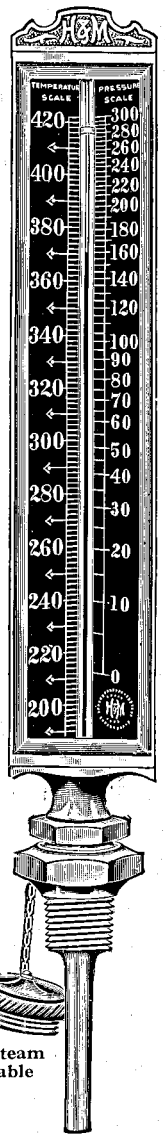
		EACH
No. 40	Straight High Pressure Thermo Steam Gauge..... With 12-inch scale and Socket D1 with 3-inch Bulb-stem.	$26.25
No. 41	Angle High Pressure Thermo Steam Gauge..... With 12-inch scale and Socket D1 with 3-inch Bulb-stem.	30.00
No. 42	Straight Low Pressure Thermo Steam Gauge..... With 9-inch scale and Socket D with 2½-inch Bulb-stem.	22.50
No. 43	Angle Low Pressure Thermo Steam Gauge..... With 9-inch scale and Socket D with 2½-inch Bulb-stem.	26.25

Nos. 40, 41, 42 and 43 will be furnished with Socket D2 or D3 (see page 5) if so specified on order.

Nos. 41 and 43 will be furnished in Side-Angle Form either Right-side or Left Side-angle, if so specified on order.



Right Side-Angle Thermo Steam Gauge, with Separable Socket Connection



Straight Thermo Steam Gauge, with Separable Socket Connection

FOR STEAM GENERATING PLANTS

Feed Water Thermometers

Straight and Angle with Thread Connection

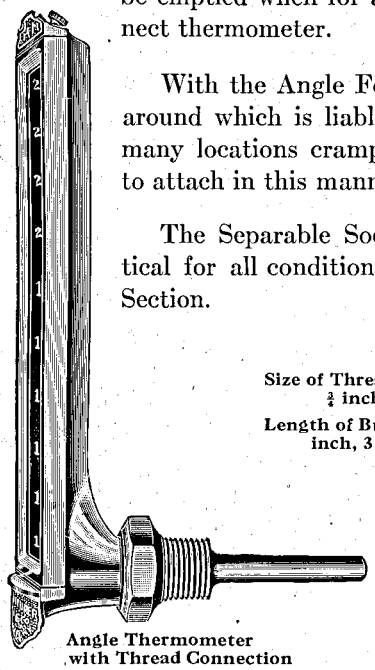
The Thread Connection is a simple means for attaching thermometer to feed-water pipes, etc.; however, its only merit is low first cost, as the system must be emptied when for any cause it is necessary to disconnect thermometer.

With the Angle Form the scale-case must be swung around which is liable to strain the instrument, also in many locations cramped conditions make it impractical to attach in this manner.

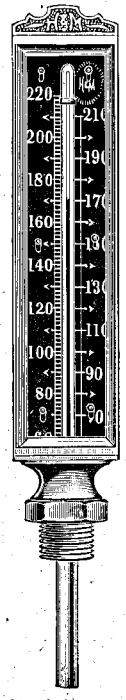
The Separable Socket connection is the most practical for all conditions. See pages 34 to 35 General Section.

Size of Thread on 7-inch and 9-inch Scale ¾ inch, 12 inch Scale 1 inch.

Length of Bulb Stem 2½ inches on 7 and 9-inch, 3 inches on 12-inch Scale.



Angle Thermometer with Thread Connection



Straight Thermometer with Thread Connection

Approximate range of Scale 40°—240° Fahrenheit.

		EACH
No. 60	Straight Feed Water Thermometer With 12-inch scale, threaded for 1-inch pipe.	$18.75
No. 61	Angle Feed Water Thermometer With 12-inch scale, threaded for 1-inch pipe.	22.50
No. 62	Straight Feed Water Thermometer With 9-inch scale, threaded for ¾-inch pipe.	15.00
No. 63	Angle Feed Water Thermometer With 9-inch scale, threaded for ¾-inch pipe.	18.75
No. 64	Straight Feed Water Thermometer With 7-inch scale, threaded for ¾-inch pipe.	11.25
No. 65	Angle Feed Water Thermometer With 7-inch scale, threaded for ¾-inch pipe.	15.00

FOR STEAM GENERATING PLANTS

Flue Gas Thermometers

With Adjustable Clamp-flange J3

In all steam plants a check on the consumption of fuel is of the utmost importance, and therefore the temperature of the waste gases escaping from the stack should be carefully noted.

For this purpose, however, a permanently accurate, easily read and substantial thermometer should be used, and the H&M Flue Gas Thermometer will be found to fill the requirements to perfection.

Approximate range of scale 200°—1000° Fahrenheit.

		EACH
No. 50	Straight Flue Gas Thermometer... With 12-inch scale and Stem extending 30 inches below scale-case.	$45.00

This instrument is extensively used for making tests, and by consulting and traveling engineers.

For convenience of carrying and protection, we can furnish a substantially made leather case, equipped with pocket for the clamp-flange.

Leather Carrying Case for No. 50 Flue Gas Thermometer..... 10.00

By means of Flange J4, the Straight thermometer may be attached to a vertical surface and the face of scale-case inclined, thus greatly facilitating observation.

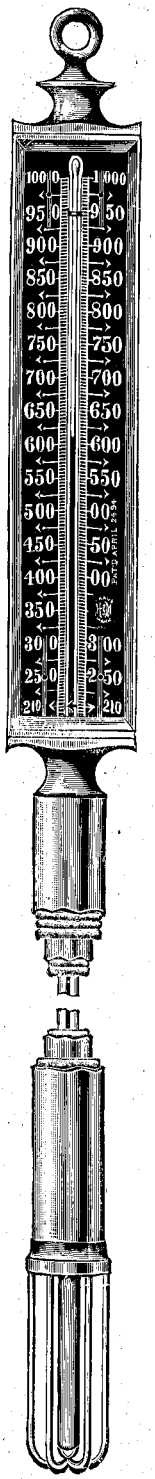
No. 50 Straight Flue Gas Thermometer will be furnished with 45° clamp-flange J4, in place of J3, if so specified on order.

No. 55	Angle Flue Gas Thermometer..... With 12-inch scale, Union Connection with 5-inch flange, stem extending 30 inches.	54.75

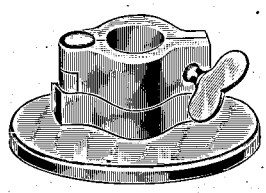
Angle Flue Gas Thermometers are made with Union Connection (Flange Form), see page 54 General Section.

Longer Stems

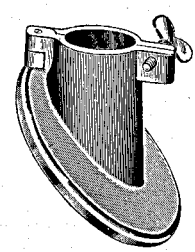
Prices for longer stem on Straight and Angle Flue Gas thermometers on application.



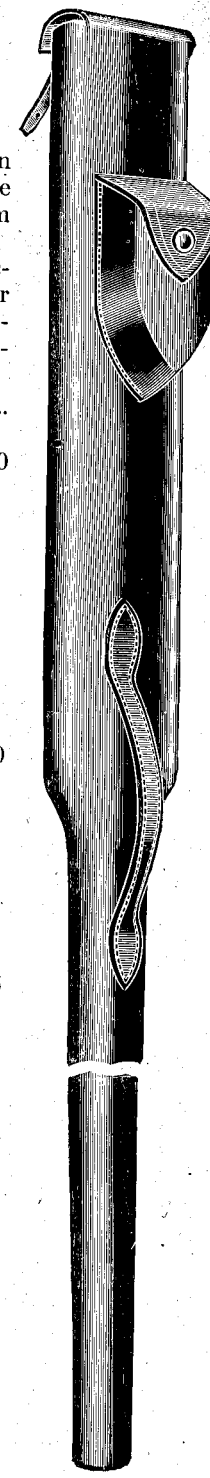
Straight Stem Flue Gas Thermometer



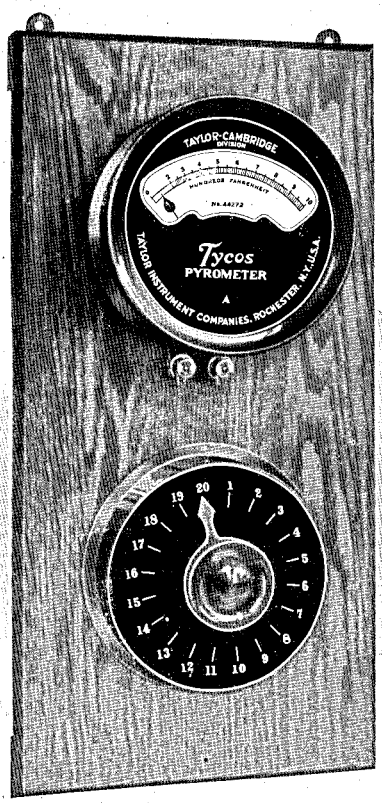
Style J3 Adjustable Clamp Flange



Style J4 Adjustable Clamp Flange



Leather Carrying Case for Straight Stem Thermometer



4933—20 Dust-proof Switchboard with
4255 Wall Type Indicator

Tycos

Thermo-Electric Pyrometers

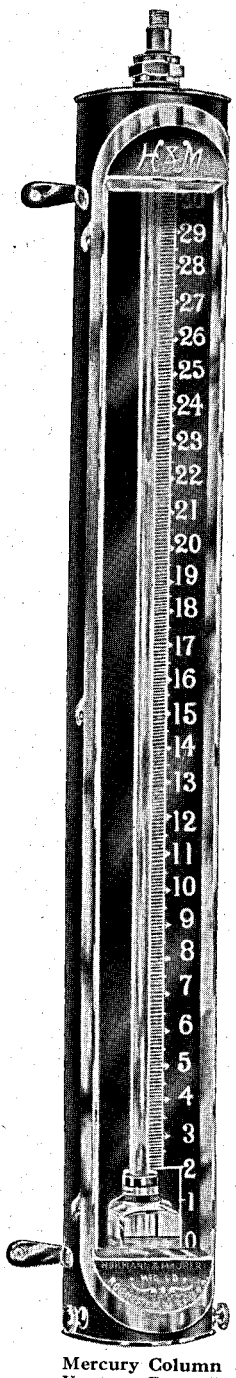
For Power Plant Use

The *Tycos* multiple Pyrometer shown in illustration indicates at a central station temperatures of 1 to 20 or more, flues, passes, etc.

Write for complete catalogues descriptive of Indicating and Recording Pyrometers for all high temperature measurements.

FOR STEAM GENERATING PLANTS

Mercury Column Vacuum Gauge



Mercury Column Vacuum Gauge

An instrument harmonizing in its characteristics with the highest grade of engine room equipment. A credit to any gauge board. Length 37⅞ inches, diameter 3½ inches. Center to center of bracket holes, vertical 30⅜ inches, horizontal 4¾ inches.

		EACH
No. 1010	Mercury Column Vacuum Gauge ..... With Cylindrical Metal case.	$45.00
No. 1010A	Mercury Column Vacuum Gauge ..... Gauge mounted on hard wood panel. Dimension 42¼ inches by 8½ inches.	51.00
No. 1010B	Mercury Column Vacuum Gauge ..... Gauge mounted on hard wood panel, with No. 1015 Catchall as shown on plan of mounting. Panel 50½ inches by 8½ inches.	75.00
No. 1012	Compound Gauge ..... 30 inches vacuum and 15 pounds pressure, otherwise same as No. 1010.	60.00
No. 1015	Catchall	15.00

Mercurial Barometer

No. 6180	Observatory Type Barometer..	56.25

No. 1010 Gauge is of practical and substantial construction in black enameled cylindrical steel case with highly polished bronze front holding a heavy glass plate over V shaped scales, oxidized, with silver deposited figures and graduations, giving a strong contrast in a permanent finish.

The Glass Tube

Is of large diameter with white enamel back-ground and strong mercury column. It is held in a stuffing box at top and has no bends. It may be cleaned easily by passing a wadded wire through from the top.

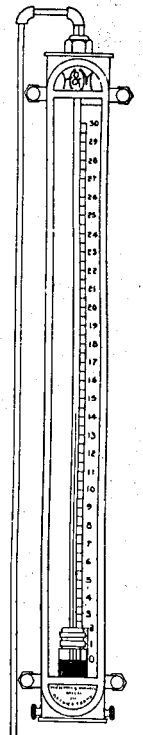
Cistern

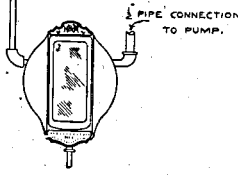
The cistern is held in position by the knurled head nuts, and can be removed for filling or cleaning by loosening the nuts and turning the cistern slightly to the left. The horizontal line across front of cistern is the height at which the mercury should stand when Gauge is set up and ready to connect.

This line coincides with the zero of the scale when gauge is not operating. When under vacuum, the level of the mercury will drop more or less according to the height of the column, and before taking reading the cistern should be raised by turning the knurled knob until the correct zero is restored.

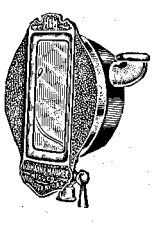
The Catchall

If condensation of moisture occurs in the connection between the vacuum Gauge and Apparatus, means must be provided to trap it and prevent the otherwise accumulation of water in the tube.





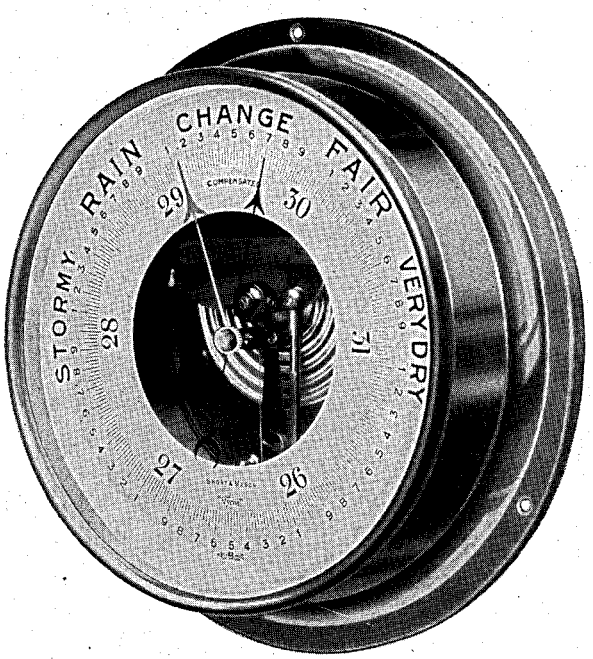
Plan of Piping for Mounting Catchall



Catchall or Moisture Trap

Tycos Barometers

For Steam Generating Plants



Engine Room or Gauge Board Barometer

The instrument illustrated is the most reliable aneroid barometer made.

Its movement is of the same high grade exacted and supplied to the U. S. Weather Bureau, the U. S. Navy, etc.

The scale is fully compensated for temperature, thereby eliminating all corrections unavoidable with mercury column barometers.

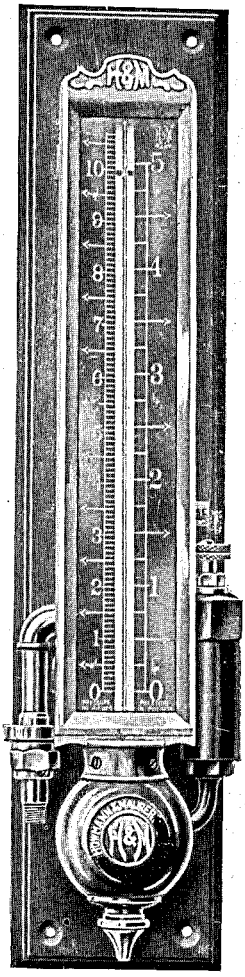
		EACH
No. 2230	A. P. L. *Tycos* Engine Room Barometer	$30.00
	6 in. brass lacquered case, open metal dial graduated in 0.02 inches from 25 to 31.	

FOR STEAM GENERATING PLANTS

Mercury Column Absolute Pressure Gauge

		EACH
No. 1020	Absolute Pressure Gauge on panel	$54.00
No. 1020A	Absolute Pressure Gauge on panel	75.00

Same as No. 1020, but mounted with Catchall No. 1015 and connections.



Absolute Pressure Gauge No. 1020

This instrument is of handsome appearance. The scales are 12 inches long housed in V-shaped casting of high grade polished bronze with heavy glass plate front.

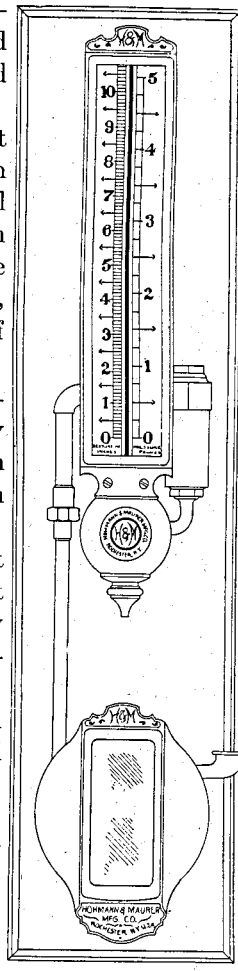
The Absolute Pressure Gauge is the exact reverse in its action of the Mercurial Vacuum Gauge, indicating, as it does, the actual pressure of air remaining in a Vacuum Apparatus. In other words, the absolute pressure above absolute vacuum instead of, as with the Vacuum Gauge, the extent of the existing vacuum below atmosphere.

Its readings are independent of barometric pressure or changes of level of mercury in the cistern, both of which must be taken into account in obtaining true readings with a Vacuum Gauge.

Its size, 18¾ x 4¼ inches, renders it portable and, in addition to its permanent use on apparatus, it is being extensively used by consulting engineers as a test instrument.

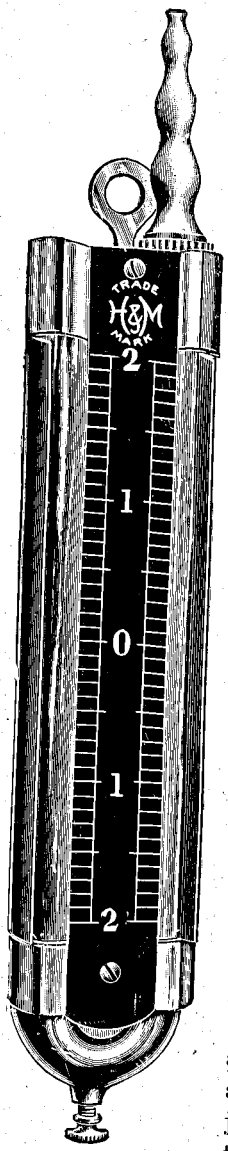
It is encased in polished bronze, with glass front protection to scale and tube, and mounted on a panel of hard wood.

Note—This gauge is furnished mounted on panel only, and unless otherwise specified with scale graduated one side 0–11 inches, other side 0–5 lbs. Size of panel for No. 1020, 18¾ x 4¼ inches; size of panel for No. 1020A, 27¼ x 4¾ inches.



Plan of Mounting with Catchall

Draft Gauges



Pocket Gauge

Improved gauges for measuring the draft at furnace front, under the grate, at the uptake or at the breeching. Made in two forms.

For occasional use — Pocket Form, fitted with hose connecting piece.

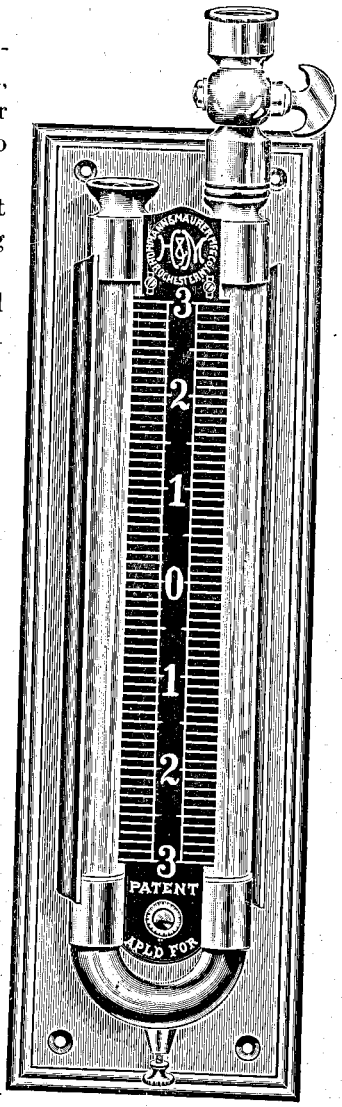
For permanant use — Mounted on metal panel and fitted with three-way cock, by means of which the gauge will be, when connected, either open to draft and closed to the atmosphere, or closed to draft and open to the atmosphere.

A magnified red column effect is obtained by means of a red stripe blown in the glass tube. The *easy reading* advantage of this feature, even in dark places, is apparent.

The H&M Armor affords protection to the gauge tubes that more than compensates for the slightly added cost.

The glass tubes are packed without cement — perfectly tight — yet easily removed for replacing or cleansing.

A knurled head pin valve at apex of the U connecting piece, admits of a quick and simple adjustment of the column of water to the zero of the scale.



Metal Panel Gauge

		EACH
No. 1000	Pocket Draft Gauge, Armored with 4-inch scale	$6.00
No. 1003	Pocket Draft Gauge, Armored with 6-inch scale	6.75
No. 1002	Metal Panel Draft Gauge, without Armor with 4-inch scale	6.00
No. 1005	Metal Panel Draft Gauge, without Armor with 6-inch scale	6.75
No. 1001	Metal Panel Draft Gauge, with Armor with 4-inch scale	7.50
No. 1004	Metal Panel Draft Gauge, with Armor with 6-inch scale	8.25

FOR STEAM GENERATING PLANTS

Heating and Ventilating Air Duct Thermometers

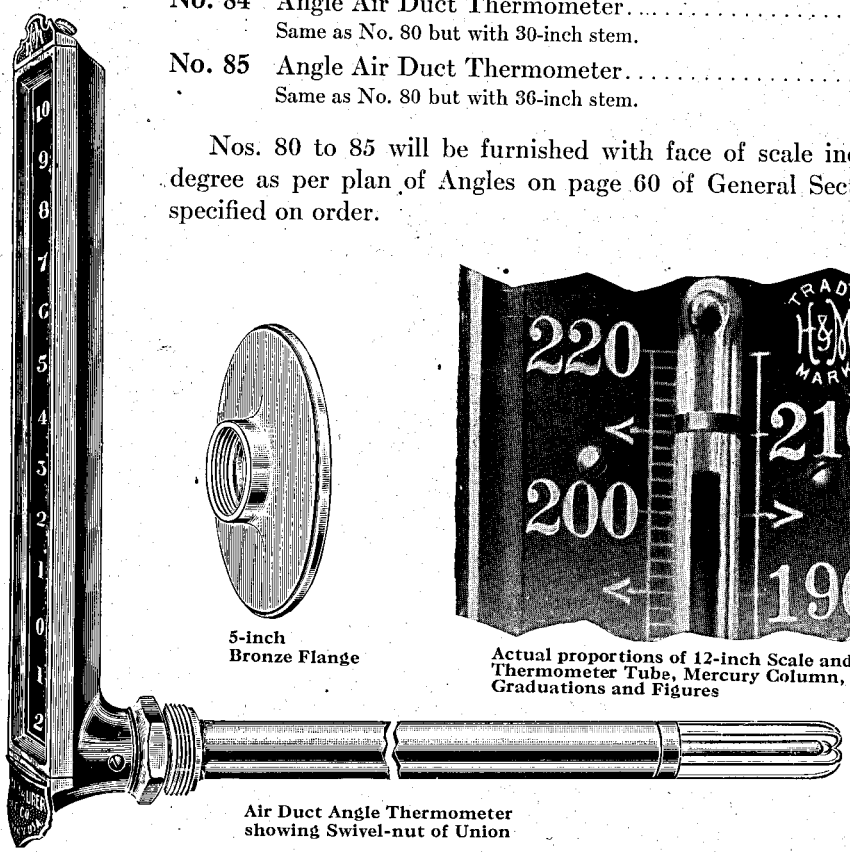
With Flange Union Connection

For heating and ventilating systems, or for any purpose where the temperature of circulating air is to be controlled.

Approximate range of scale 0°—160° Fahrenheit.

		EACH
No. 80	Angle Air Duct Thermometer. With 12-inch scale and 6-inch Stem.	$26.25
No. 81	Angle Air Duct Thermometer. Same as No. 80 but with 12-inch Stem.	28.50
No. 82	Angle Air Duct Thermometer. Same as No. 80 but with 18-inch Stem.	30.75
No. 83	Angle Air Duct Thermometer. Same as No. 80 but with 24-inch Stem.	33.00
No. 84	Angle Air Duct Thermometer. Same as No. 80 but with 30-inch stem.	35.25
No. 85	Angle Air Duct Thermometer. Same as No. 80 but with 36-inch stem.	37.50

Nos. 80 to 85 will be furnished with face of scale inclined any degree as per plan of Angles on page 60 of General Section, if so specified on order.



5-inch Bronze Flange

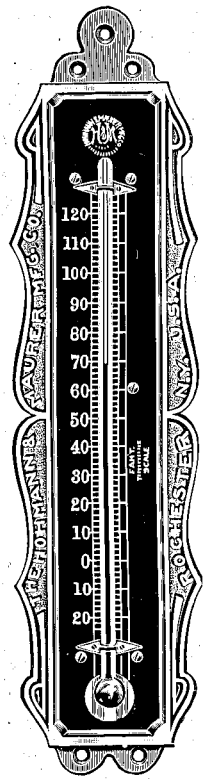
Actual proportions of 12-inch Scale and Case, Thermometer Tube, Mercury Column, Graduations and Figures

Air Duct Angle Thermometer showing Swivel-nut of Union

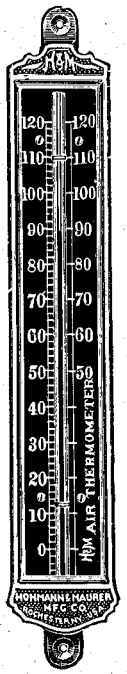
FOR HEATING AND VENTILATING

Factory Thermometers

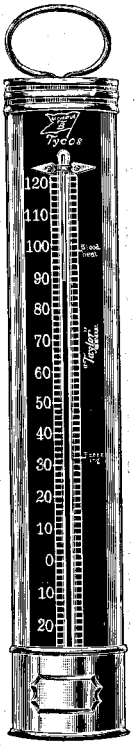
The Auto Circulating and Galvanized Case Thermometers are particularly suitable for Factory Rooms, Offices, Institutions, Hospitals, Schools, etc. The cases are strong and durable and shaped to give the greatest practical protection to the Mercury tube.



Galvanized I. Case Thermometer



The Auto Circulation Thermometer Case is a V shaped casting of bronze or nickeled iron with polished face. The brackets for securing permit free circulation of air.



Japanned Tin or Copper Case Thermometer

		EACH
No. 1103	Auto Circulating Thermometer..... In nickeled case with 9 inch scale and range approximately 0-120 F.	$2.25
No. 1104	Same as No. 1103 but in Bronze Case.....	4.50
No. 1108	Galvanized Case Thermometer..... With 12-inch scale, approximate range 20° below zero to +120° Fahrenheit in 2 degree graduations.	2.25

Metal Plate Thermometers

In Japanned Tin and Copper Cases

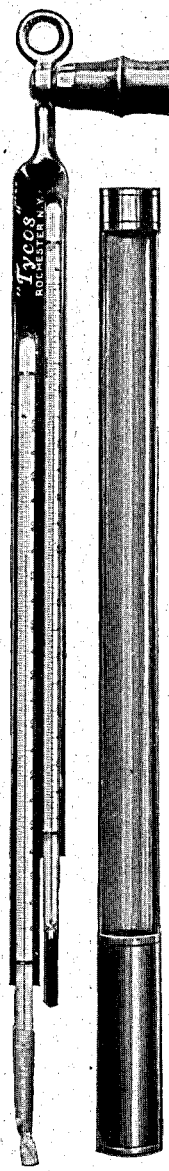
		PER DOZ.
No. 1234	12 in. Copper Case Oxidized scale Range —20 +120 F.....	$25.50
No. 1242	12 in. Japanned Case Silvered scale Range —20 +120 F.....	21.00
No. 5400P	10 in. Copper Case Oxidized scale Range —20 +120 F.....	18.75
No. 5400	10 in. Japanned Case Silvered scale Range —20 +120 F.....	15.00

Above numbers will be furnished with range of scale 0 –220 at same prices.

FOR HEATING AND VENTILATING

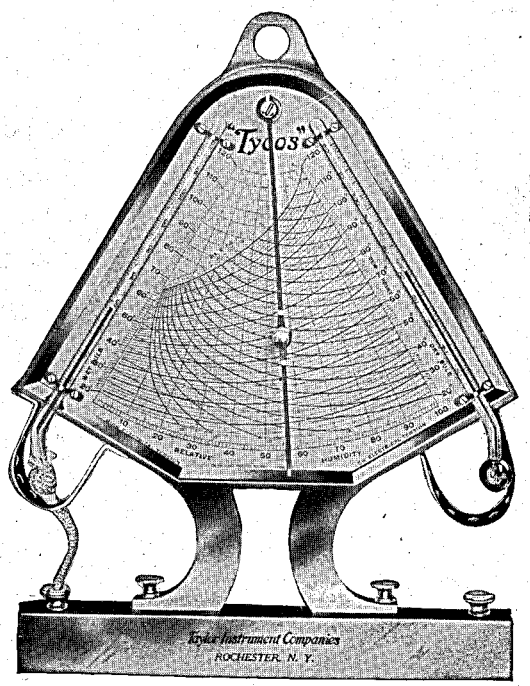
Hygrometers

For Investigation and Control of Humidity



Sling Psychrometer and Protecting Case

The instrument illustrated herewith is a wet and dry bulb Hygrometer with the thermometer tubes mounted on a chart, on the side margins of which the temperature scales are engraved. By following directions given, the existing humidity can be read off the chart without reference to tables.



Tycos Hygrodeik (Hanging Form)

		EACH
No. 1305	*Tycos* Hygrodeik (Hanging Form)..... Frame of polished brass; chart engraved on German silver. Range of scale 20–120 degrees Fahrenheit, in 1 degree graduations.	$15.00
No. 1300A	*Tycos* Hygrodeik (Standing Form)..... Frame of polished brass with stand for setting on shelf, otherwise same as No. 1305.	13.50
No. 1322	Sling Psychrometer..... With 12-inch engraved stem thermometers graduated 0° – 100° Fahrenheit in ½ degrees.	9.00
No. 1323	Pocket Sling Psychrometer..... 7 in. long with chain sling, 5 in. engraved stem thermometers graduated 0–100 Fahrenheit in 1 degree, complete with leather carrying case.	10.50

The advantage of the Sling Psychrometer over the stationary form hygrometer is the facility with which tests can be made quickly, and the accuracy of the readings obtainable, as in whirling the bulbs they are subjected to perfect circulation.

Engraved Stem Thermometers

The glass tube thermometer filled with mercury and scale engraved on the stem, is the simplest form of instrument for measuring temperature. It can be used in numberless operations, but its very simplicity may be the cause of incorrect reading or unforseen difficulties. If reliable results are desired, it is necessary to select the instrument best adapted for the work and to use it in a manner to secure satisfactory operation.

Great progress has been made in thermometer manufacture, not only in the use of special glasses with well defined characteristics, such as stability and resistance at high temperatures, but particularly in the heat treatment during the processes of manufacture, in the elimination of impurities in the mercury, the filling of the bore above the column with gas to prevent distillation or separation, and the artificial ageing, a process developed by us which secures permanent accuracy of the indications of the scale.

Thermometers listed herewith embody the highest qualities. They have been thoroughly aged before calibration and the scales are graduated for standard conditions or so-called full immersion. (Except Nos. 1406 and 1407.)

For engraved stem thermometers with scale graduated for partial immersion, see Armored thermometers

Graduations in Fahrenheit Scale

	LENGTH INCHES	SCALE	APPROXIMATE SCALE RANGE	SUBDIVISION	PRICE EACH
No. 1400	12	Fahr.	— 20°–120°	1°	$2.25
No. 1401	12	Fahr.	0 –220°	2°	2.25
No. 1402	12	Fahr.	+ 30°–300°	2°	2.25
No. 1403	14	Fahr.	+ 30°–400°	2°	3.00
No. 1404	16	Fahr.	+ 30°–600°	2°	3.75
No. 1405	16	Fahr.	+ 30°–750°	2°	5.25
No. 1406	16	Fahr.	+100°–900°	5°	6.75
No. 1407	16	Fahr.	+100°–1000°	5°	8.25

Graduations in Centigrade Scale

No. 1408	12	Centigrade	0°–100°	1°	$2.25
No. 1409	12	Centigrade	0°–150°	1°	2.25
No. 1410	14	Centigrade	0°–200°	1°	3.00
No. 1411	16	Centigrade	0°–300°	1°	3.75
No. 1412	16	Centigrade	0°–400°	1°	5.25
No. 1413	16	Centigrade	0°–480°	2°	6.75
No. 1414	16	Centigrade	0°–540°	2°	8.25

Each Thermometer packed in a turned wood box

Nos. 1406, 1407, 1413 and **1414** are scaled for 3-inch immersion only and without eyelet at top.

Engraved Stem Thermometer

FOR STEAM GENERATING PLANTS

Armored Engraved Stem Thermometers

The instrument illustrated herewith is encased in a nickel-plated steel tube with a portion of the side milled out and the lower end perforated to allow circulation around the bulb.

The so-called Armor offers great protection to the thermometer which is suspended from the screw-cap and can easily be removed for replacing.

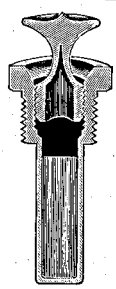
Engraved stem thermometers for use in Armor have scale engraved for 3-inch immersion with emergent mercury column subject to normal temperature. Each instrument has immersion line engraved on the stem. Armored thermometers are adapted for use in wells inserted in pipe lines, etc. To insure satisfactory contact, mercury should be used in the well.

Graduations in Fahrenheit Scale

	LENGTH INCHES	SCALE	SCALE RANGE	SUB-DIVISION	PRICE EACH COMPLETE WITH ARMOR	PRICE EACH WITHOUT ARMOR
No. 1440	12	Fahr.	— 20°– 120°	1°	$4.50	$2.25
No. 1441	12	Fahr.	0°– 220°	2°	4.50	2.25
No. 1442	12	Fahr.	+ 30°– 300°	2°	4.50	2.25
No. 1443	14	Fahr.	+ 30°– 400°	2°	5.25	3.00
No. 1444	16	Fahr.	+ 30°– 600°	2°	6.00	3.75
No. 1445	16	Fahr.	+ 30°– 750°	2°	7.50	5.25
No. 1446	16	Fahr.	+100°– 900°	5°	9.00	6.75
No. 1447	16	Fahr.	+100°–1000°	5°	10.50	8.25

Graduations in Centigrade Scale

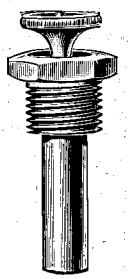
No. 1448	12	Cent.	0 – 100°	1°	4.50	2.25
No. 1449	12	Cent.	0 – 150°	1°	4.50	2.25
No. 1450	14	Cent.	0 – 200°	1°	5.25	3.00
No. 1451	16	Cent.	0 – 300°	1°	6.00	3.75
No. 1452	16	Cent.	0 – 400°	1°	7.50	5.25
No. 1453	16	Cent.	0 – 480°	2°	9.00	6.75
No. 1454	16	Cent.	0 – 540°	2°	10.50	8.25



Cross Section of Mercury Well

Mercury Wells

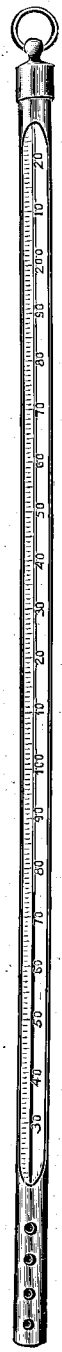
The wells illustrated herewith are machined from steel bars, threaded for ½-inch pipe, and fitted with screw-plug to retain mercury in transportation or keep out foreign matter when well is connected but not in use.



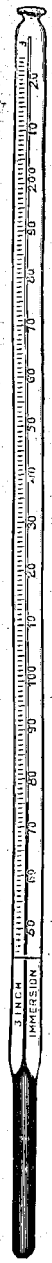
Mercury Well with Screw Plug

Lengths of Stem and Prices

LENGTH BELOW THREAD	PRICE	LENGTH BELOW THREAD	PRICE	LENGTH BELOW THREAD	PRICE	LENGTH BELOW THREAD	PRICE
1½ in.	$1.50	3 in.	$2.40	4½ in.	$3.30	7 in.	$7.20
2 in.	1.80	3½ in.	2.70	5 in.	3.60	....	.....
2½ in.	2.10	4 in.	3.00	6 in.	4.80	....	.....



Armored Thermometer



Engraved Stem Thermometer for Armor

FOR STEAM GENRATING PLANTS

Precision Engraved Stem Thermometers

For fine test work in the laboratory or otherwise, in Calorimetry or for purposes requiring the measurement of temperature to small fractions of a degree, it is necessary to use instruments permitting greater discrimination than is possible with regularly scaled engraved stem thermometers.

Precision thermometers with scale graduated in fractions of degrees, necessitate great refinement in the processes of manufacture to insure the high degree of accuracy guaranteed by our Certificate of final test, in comparison with U. S. Standards.

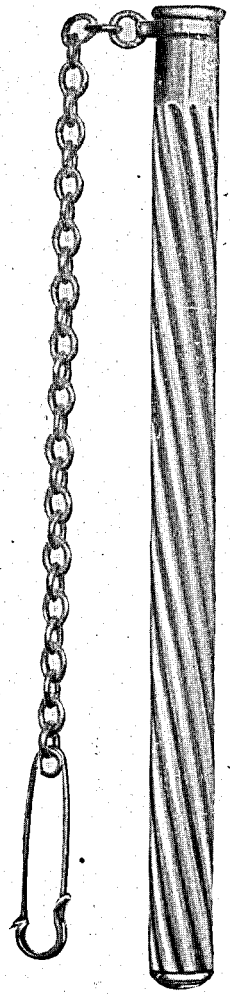
To meet the great diversity of individual requirements, Precision thermometers differing from those listed and with scale range as desired, if within limits of 30° below zero and 300° Fahrenheit, will be made to order at prices listed in corresponding lengths, if subdivisions specified are practical and not finer than 1-10 degree.

Number of Scale-divisions practical per inch

Felt Lined Brass Case

		EACH
No. 1463	15-inch Precision Thermometer..... Range of scale 30° below zero to 110° Fahrenheit, graduated in 1-5 degrees.	$24.00
No. 1464	15-inch Precision Thermometer..... Range of scale zero to 220° Fahrenheit, graduated in ½ degrees.	24.00
No. 1465	15-inch Precision Thermometer..... Range of scale 80° to 300° Fahrenheit, graduated in ½ degrees.	24.00
No. 1466	18-inch Precision Thermometer..... Range of scale 30° below zero to +40° Fahrenheit, graduated in 1/10 degrees.	28.50
No. 1467	21-inch Precision Thermometer..... Range of scale 30° to 120° Fahrenheit, graduated in 1/10 degrees.	33.00
No. 1468	21-inch Precision Thermometer..... Range of scale 120° to 220° Fahrenheit, graduated in 1/10 degrees.	33.00
No. 1469	24-inch Precision Thermometer..... Range of scale 30° to 220° Fahrenheit, graduated in 1/5 degrees.	37.50
No. 1471	21-inch Precision Thermometer..... Range of scale, zero to 50° Centigrade, graduated in 1/10 degrees.	33.00
No. 1472	24-inch Precision Thermometer..... Range of scale, zero to 100° Centigrade, graduated in 1/10 degrees.	37.50

Each instrument packed in Felt-lined brass case as per illustration.



Aluminum Pocket Case

Engraved Stem Thermometers

In Pocket Case

These thermometers are made in convenient form for carrying about, and may be used for making temperature tests of any kind.

The Pocket Case is made of spiral ribbed aluminum tubing, as illustrated. The thermometer tube is secured in the cap without packing or cement, and can easily be removed for replacing.

For protection when in use, the thermometer tube may be encased in Armor as shown in reduced size illustration, and similar to description on page 22.

5-inch Armored Pocket Thermometer

Pocket Test Thermometer Actual Size

		EACH
No. 1484	5-inch Pocket Thermometer. Approximate range of scale 30° below zero to +120° Fahrenheit in 2° graduations.	$2.25
No. 1485	5-inch Pocket Thermometer. Approximate range of scale 0°+220° Fahrenheit in 2° graduations.	2.25
No. 1489	5-inch Armored Pocket Thermometer. Approximate range of scale 30° below zero to +120° Fahr. in 2° graduations.	3.75
No. 1493	5-inch Armored Pocket Thermometer. Approximate range of scale 0°+220° Fahrenheit in 2° graduations.	3.75

Above listed thermometers will be furnished with scale graduated in Centigrade or Reaumur without extra charge.

Extra Engraved Stem Thermometer for Pocket case 2.10

FOR STEAM GENERATING PLANTS

Maximum Registering Engraved Stem Thermometers

In Pocket Case or Armor

The Maximum Registering Thermometer is used for registering the highest degree of heat in any location or condition where it is exposed. It is particularly serviceable in locations inconvenient or impractical of access for determining the temperature by an indicating thermometer.

The registering feature consists in an obstruction formed by narrowing or contracting of the bore in the tube immediately above the bulb (see illustration), which, while allowing the mercury to raise when heated, prevents the column from receding into the bulb on cooling. The maximum reading can, therefore, be observed any time after exposure, and, for repeating use, the column is shaken down by subjecting thermometer to a swinging motion.

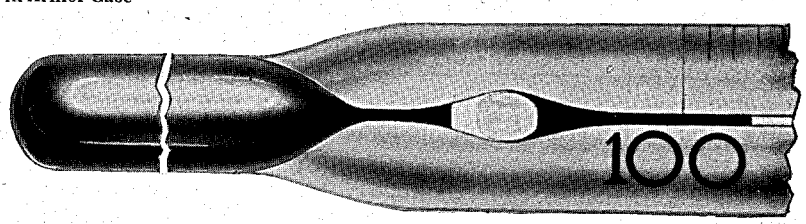
		EACH
No. 1486	5-inch Pocket Maximum Registering Thermometer..... Approximate range of scale, 0°–220° Fahrenheit, in 2° graduations.	$3.75
No. 1490	5-inch Armored Pocket Maximum Registering Thermometer..... Approximate range of scale 0°–220° Fahrenheit, in 2° graduations.	5.25
No. 1496	5-inch Maximum Registering Thermo'ter In Armor Case. Approximate range of scale 0°–220° Fahrenheit in 2° graduations.	3.75
No. 1494	5-inch Maximum Registering Thermo'ter In Armor Case. Scale range 200°–300° in 1 degree graduations.	3.75
No. 1495	5-inch Maximum Registering Thermo'ter In Armor Case. Scale range 100°-400° in 2° graduations.	3.75

Above listed thermometers will be furnished with scale graduated in Centigrade without extra charge.

Extra Engraved Stem Maximum registering thermometer for pocket or armor case..... 3.60

Maximum Registering Thermometer in Armor Case

Actual Size of Maximum Registering Thermometer for Pocket or Armor Case



Section of Maximum Registering Thermometer Tube greatly Magnified Showing Contraction of the Bore

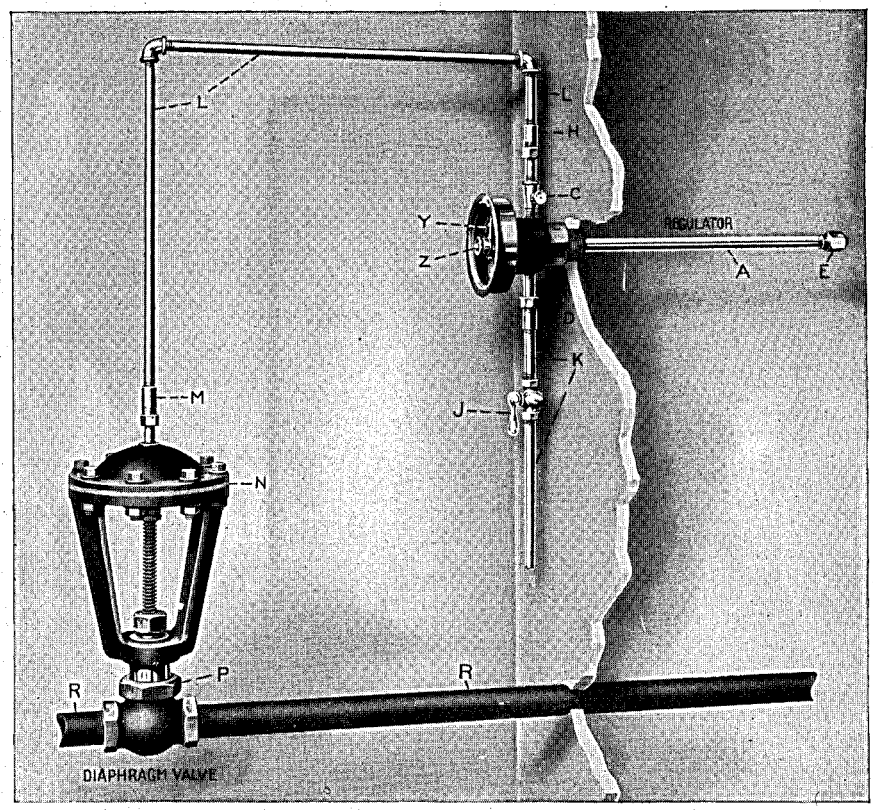
Tycos

Automatic Temperature and Pressure

Regulators

For Feedwater Heaters, Hot Water Service Tanks, Forced Draft (Argand Blowers), Etc.

We publish complete catalogs on Temperature Regulation. Write us of your problems.

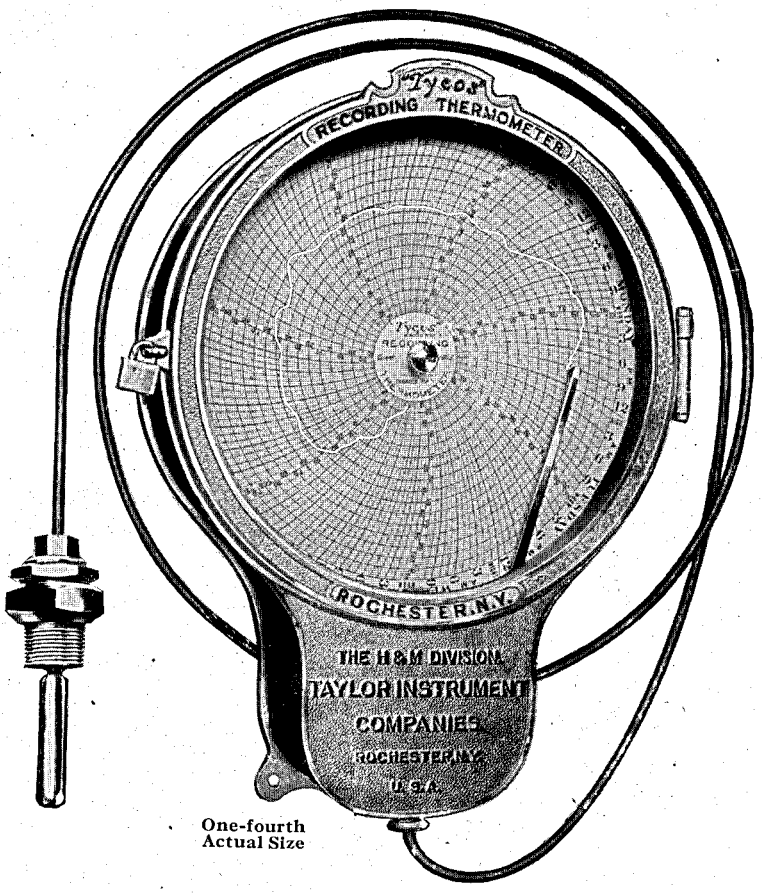


Temperature Regulator applied to Enclosed Space or Tank

FOR STEAM GENERATING PLANTS

Tycos Recording Thermometers

For Condensers, Feedwater Lines, Economizers, Superheated Steam Pipes, Flue Gases, Air Ducts, Etc.



One-fourth Actual Size

The *Tycos* Recording Thermometer case is of attractive and compact design, finished in nickel with polished front.

Tycos Recording Thermometers operate by the expansion of mercury contained in a powerful tube system of practical construction, which insures great sensitiveness yet lacking entirely in delicate features.

The Chart is of practical dimensions with scale as wide as in so-called 12-inch charts.

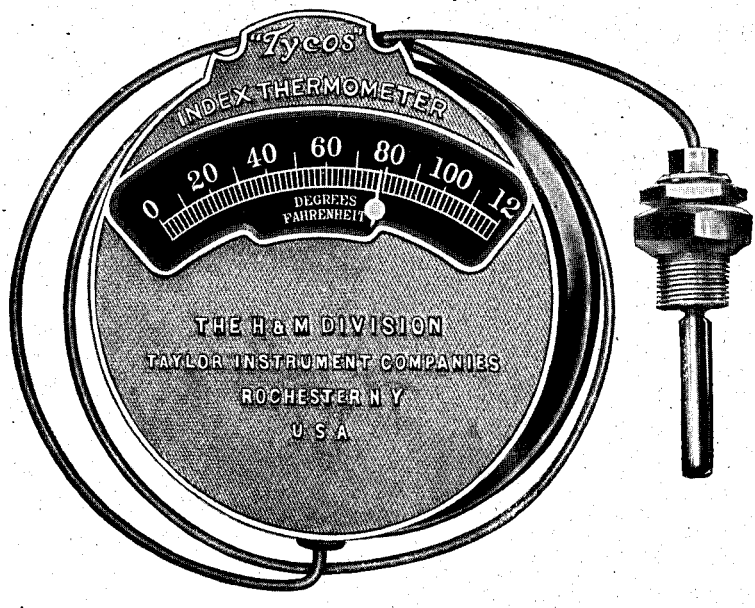
For actual size of charts, see illustrations on pages 30 and 31.

The graduations of the Chart are uniform throughout the entire range, and the indications of the instrument are of a high degree of accuracy and permanent reliability.

The flexible Capillary connecting tubing is practically indestructible, and therefore requires *no* protecting tubing.

Tycos Index Thermometers

For Condensers, Feedwater Lines, Economizers, Superheated Steam Pipes, Flue Gases, etc.



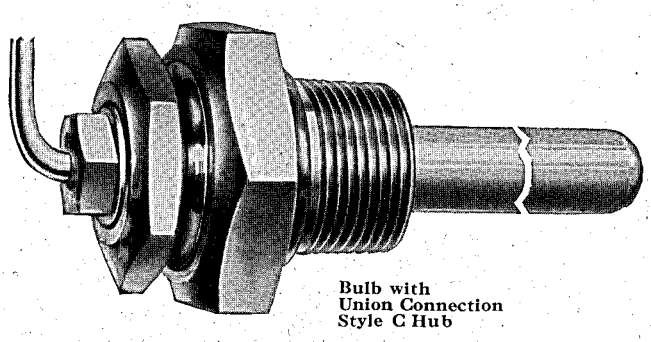
Tycos Index Thermometers embody all the characteristics of *Tycos* Recording Thermometers. They are specially adapted for uses where, on account of inaccessibility, the mercury column thermometer is either impractical or too inconvenient for observation. The indicator may be placed wherever desired for convenient reading without reference to location of bulb.

Diameter of case is 7 inches across face, with body finished in black enamel and polished nickel front.

For information on scale ranges, etc., see page 31.

Tycos Recording Thermometer

Bulb with Union Connection
Style C Hub threaded for 1-inch Pipe



Bulb with
Union Connection
Style C Hub

When ordering state number of chart desired. For lists of charts see pages *30* and *31*.

		EACH
No. 8004	*Tycos* Recording Thermometer ..... Bulb with Union Connection and 6 feet of flexible capillary connecting tubing. Chart as selected for any temperature range within limits of 40° below zero to + 500° Fahrenheit.	$78.75
No. 8005	*Tycos* Recording Thermometer ..... Same as No. 8004, with chart as selected for any temperature range not exceeding 800° Fahrenheit.	87.75
No. 8006	*Tycos* Recording Thermometer ..... Same as No. 8004, with chart as selected for any temperature range not exceeding 1000° Fahrenheit.	99.75

Each instrument is supplied complete with lock and key, box of 100 Charts and bottle of *Tycos* Recorder ink.

Tycos Index Thermometer

For table of scale ranges, etc., see page 31.

		EACH
No. 9004	*Tycos* Index Thermometer ..... Bulb with Union Connection and 6 feet of flexible capillary connecting tubing. Scale graduated for temperature range selected within limits of 40° below zero to + 500° Fahrenheit.	$63.75
No. 9005	*Tycos* Index Thermometer ..... Same as No. 9004, but for temperature range not exceeding 800° Fahrenheit.	72.75
No. 9006	*Tycos* Index Thermometer ..... Same as No. 9004, but for temperature range not exceeding 1000° Fahrenheit.	84.75

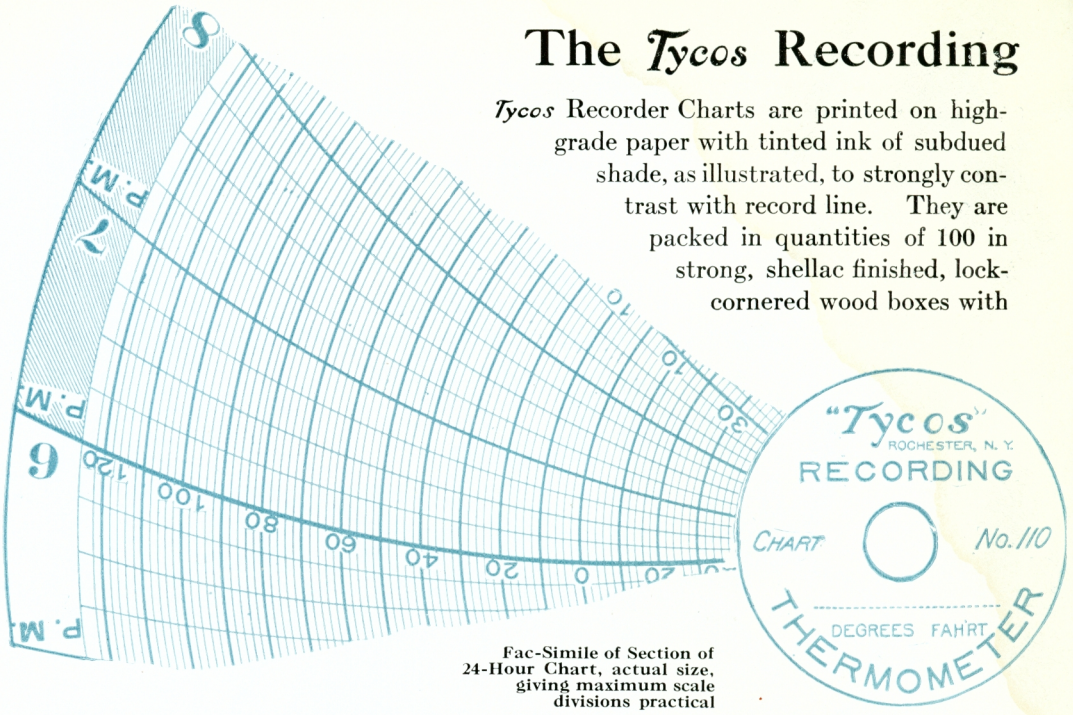
Greater Length of Capillary Connecting Tubing

Instruments listed above will be made with connecting tubing longer than 6 feet if desired.

If total length required is 25 feet or less, add to list prices for each additional foot.....	$0.90
For length over 25 feet and not exceeding 75 feet, add to list prices 19 feet at 90 cents, and for each additional foot.....	3.00

The *Tycos* Recording

Tycos Recorder Charts are printed on high-grade paper with tinted ink of subdued shade, as illustrated, to strongly contrast with record line. They are packed in quantities of 100 in strong, shellac finished, lock-cornered wood boxes with



Fac-Simile of Section of 24-Hour Chart, actual size, giving maximum scale divisions practical

List of Charts for Temperature Ranges Within Limits of 40° Below Zero and +500° Fahrenheit

Chart No.	Temp. Scale According to	Temperature Range	Graduations	Period of Revolution	Chart No.	Temp. Scale According to	Temperature Range	Graduations	Period of Revolution
104	Fahr.	+30 — 230	5°	24 Hrs.	300	R'm'r	0 — 90	2°	24 Hrs.
105	Fahr.	150 — 250	2°	24 Hrs.	301	R'm'r	−20 — 30	1°	24 Hrs.
106	Fahr.	80 — 330	5°	24 Hrs.	700	Fahr.	120 — 220	2°	6 Hrs.
108	Fahr.	100 — 500	10°	24 Hrs.	701	Fahr.	100 — 220	2°	6 Hrs.
110	Fahr.	−40 — 120	2°	24 Hrs.	702	Fahr.	120 — 220	2°	12 Hrs.
111	Fahr.	+10 — 120	2°	24 Hrs.	703	Fahr.	200 — 300	2°	6 Hrs.
112	Fahr.	0 — 300	5°	24 Hrs.	704	Fahr.	150 — 400	5°	48 Hrs.
113	Fahr.	−20 — 60	2°	24 Hrs.	705	Fahr.	100 — 250	2°	48 Hrs.
115	Fahr.	150 — 350	5°	24 Hrs.	706	Fahr.	200 — 500	5°	48 Hrs.
117	Fahr.	0 — 100	2°	24 Hrs.	707	Fahr.	140 — 260	2°	12 Hrs.
119	Fahr.	+30 — 150	2°	24 Hrs.	708	Fahr.	+30 — 150	2°	12 Hrs.
120	Fahr.	60 — 220	2°	24 Hrs.	710	Fahr.	150 — 250	2°	12 Hrs.
121	Fahr.	170 — 270	2°	24 Hrs.	711	Fahr.	70 — 230	2°	12 Hrs.
122	Fahr.	200 — 300	2°	24 Hrs.	1000	Fahr.	50 — 150	2°	7 Days
123	Fahr.	250 — 450	5°	24 Hrs.	1001	Fahr.	+30 — 230	5°	7 Days
124	Fahr.	−20 — 140	2°	24 Hrs.	1002	Fahr.	−40 — 120	2°	7 Days
129	Fahr.	250 — 400	2°	24 Hrs.	1003	Fahr.	+30 — 140	2°	7 Days
131	Fahr.	50 — 400	5°	24 Hrs.	1004	Fahr.	−100— 500	10°	7 Days
132	Fahr.	+20 — 180	2°	24 Hrs,	1005	Fahr.	0 — 100	2°	7 Days
200	Cent.	0 — 110	2°	24 Hrs.	1006	Fahr.	+10 — 120	2°	7 Days
201	Cent.	10 — 120	2°	24 Hrs.	1008	Fahr.	40 — 160	2°	7 Days
204	Cent.	0 — 50	1°	24 Hrs.	1201	Cent.	10 — 120	2°	7 Days
205	Cent.	0 — 60	1°	24 Hrs.	1202	Cent	30 — 140	2°	7 Days
213	Cent.	−20 — 60	2°	24 Hrs.	1203	Cent.	−40 — 120	2°	7 Days
219	Cent.	+30 — 150	2°	24 Hrs.	1204	Cent.	+20 — 80	1°	7 Days
220	Cent.	60 — 220	2°	24 Hrs.					

List of Charts for Temperature Ranges Over 500° and not Exceeding 800° Fahrenheit

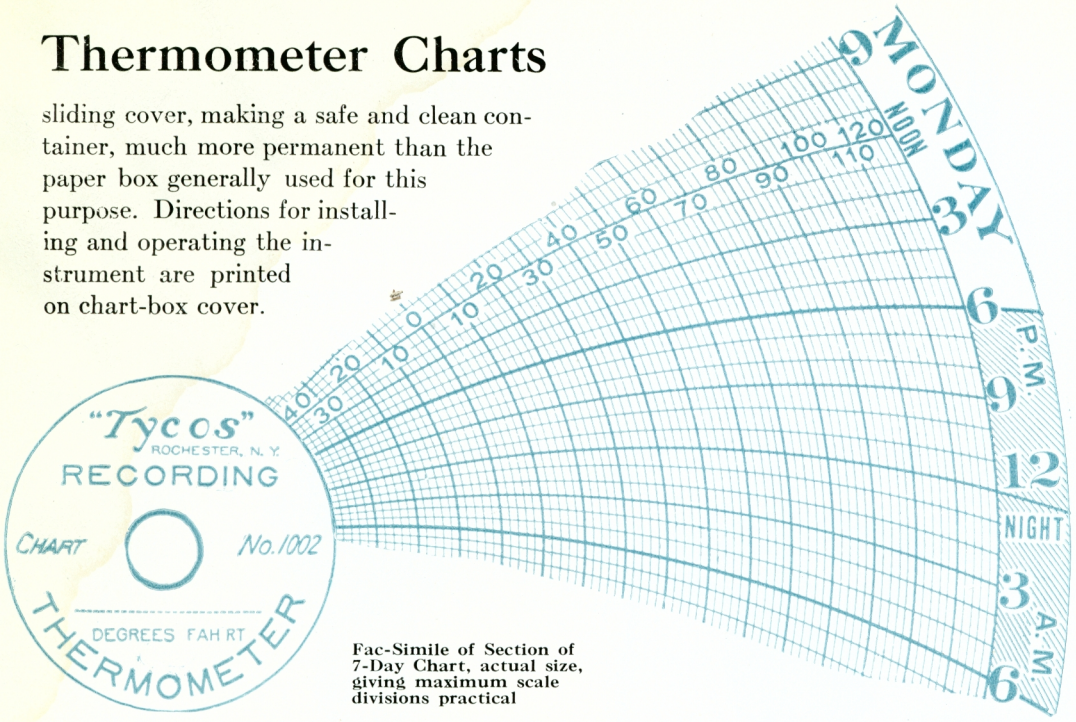
107	Fahr.	200 — 700	10°	24 Hrs.	709	Fahr.	200 — 750	10°	72 Hrs.
116	Fahr.	200 — 800	10°	24 Hrs.	1007	Fahr.	200 — 700	10°	7 Days
128	Fahr.	100 — 800	10°	24 Hrs.	206	Cent.	80 — 330	5°	24 Hrs.
130	Fahr.	150 — 550	5°	24 Hrs.	231	Cent.	50 — 400	5°	24 Hrs.

List of Charts for Temperature Ranges Over 800° and not Exceeding 1000° Fahrenheit

109	Fahr.	200 —1000	20°	24 Hrs.	202	Cent.	250 — 450	5°	24 Hrs.
125	Fahr.	80 —1000	20°	24 Hrs.	208	Cent.	100 — 500	10°	24 Hrs.

Thermometer Charts

sliding cover, making a safe and clean container, much more permanent than the paper box generally used for this purpose. Directions for installing and operating the instrument are printed on chart-box cover.



Fac-Simile of Section of 7-Day Chart, actual size, giving maximum scale divisions practical

Reverse Figured Charts

These charts are figured from right to left with minimum of temperature range at circumference instead of at center.

Chart No.	Temp. Scale Accor'g to	Temperature Range	Graduations	Period of Revolution
600	Fahr.	−40 — 60	2°	24 Hrs.
650	Cent.	10 — 120	2°	24 Hrs.
1350	Fahr.	60 — 120	5°	7 Days
1351	Fahr.	10 — 120	2°	7 Days
1375	Cent.	− 5 — 50	1°	7 Days

Special Charts Made to Order

Such charts differing from those enumerated in these lists, with scale ranges selected within limits as per schedule below, will be made to order.

Extra for engraving special chart, including 100 printed copies $22.50

Additional quantities charged at regular rates.

For temperature ranges within limits of

+ 50° and + 300° Fahr., chart scale may cover any 50 degrees or more
0° and + 300° Fahr., chart scale may cover any 100 degrees or more
− 20° and + 300° Fahr., chart scale may cover any 120 degrees or more
− 40° and + 300° Fahr., chart scale may cover any 140 degrees or more
0° and + 600° Fahr., chart scale may cover any 200 degrees or more
0° and + 700° Fahr., chart scale may cover any 300 degrees or more
0° and + 800° Fahr., chart scale may cover any 500 degrees or more
0° and +1000° Fahr., chart scale may cover any 700 degrees or more

Charts for Blue Printing Records

If specified, charts printed in black ink will be furnished without extra charge.

Scale Ranges for Index Thermometers

The scale of the Index Thermometer is a 6-inch section of a circle, 1½ inches wide, the center line of which has a radius of 4½ inches. The number of graduations on this scale can be either 40, 50, 60 or 70 divisions. These may be marked for any temperature range desired, provided the maximum temperature is not less than 100° Fahrenheit or the total number of degrees on scale the sum of a multiple of either set of graduations, each division being either 2°, 5°, 10° or 20°.

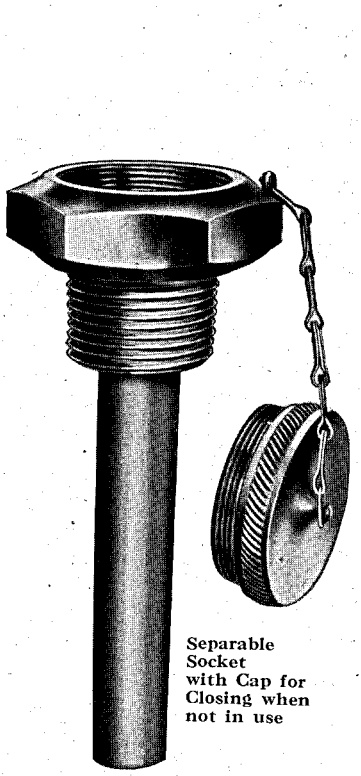
Examples: Range 0— 120, 60 divisions, each 2°
Range 80— 220, 70 divisions, each 2°
Range 100— 300, 40 divisions, each 5°
Range 200— 700, 50 divisions, each 10°
Range 200—1000, 40 divisions, each 20°

FOR STEAM GENERATING PLANTS

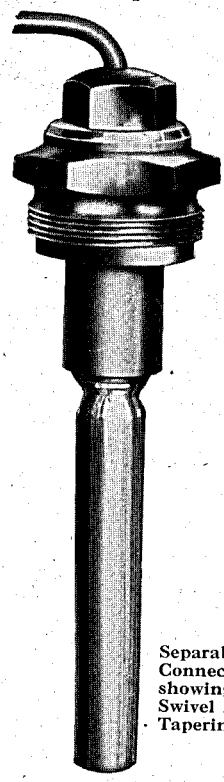
Tycos Recording Thermometer

Bulb with Separable Socket Connection

Socket threaded for 1-inch Pipe



Separable Socket with Cap for Closing when not in use



Separable Socket Connection Bulb showing Swivel Nut and Tapering Stem

The separable socket feature as illustrated has numerous advantages as a form of Bulb-connection, and will be found best suited for conditions necessitating protection of bulb against corrosion or on apparatus under continuous operation to avoid shutting down when disconnecting instrument. The socket is a well, machined from one piece, bored and taper-reamed to accurate dimensions to fit exactly corresponding tapering stem surfaces of bulb which is seated to perfect contact by means of the swivel-nut of the union.

Standard Length Stem Sockets

These are proportioned to cover certain temperature ranges within limits given in table herewith. Measurements give length of stem below thread.

NUMBER OF DEGREES FAHRENHEIT ON CHART	LENGTH OF STEM
100° and up, but not exceeding 140°	4¼ Inches
150° and up, but not exceeding 200°	3½ Inches
200° and up, but not exceeding 250°	3 Inches

For temperature ranges requiring a total number of degrees on chart in excess of 250, the length of the Bulb is 6 inches or less and of uniform diameter, fitting snugly the straight bored socket.

FOR STEAM GENERATING PLANTS

Tycos Recording Thermometer

Bulb with Separable Socket Connection

Socket threaded for 1-inch Pipe

For illustration and description, see page opposite.

When ordering, state number of chart desired. For lists of charts, see pages 30 and 31.

		EACH
No. 8053	*Tycos* Recording Thermometer	$86.25
	Bulb with Separable Socket Connection and 6 feet of flexible capillary connecting tubing. Chart as selected for any temperature range within limits of 40° below zero and +500° Fahrenheit.	
	For longer stem on socket, add to list for each 6 inches or fraction over standard length	3.75
No. 8054	*Tycos* Recording Thermometer	95.25
	Same as No. 8053, with chart as selected for any temperature range not exceeding 800° Fahrenheit.	
No. 8055	*Tycos* Recording Thermometer	107.25
	Same as No. 8053, with chart as selected for any temperature range not exceeding 1000° Fahrenheit.	
	Each instrument is supplied complete with lock and key, box of 100 charts and bottle of *Tycos* Recorder ink.	

Tycos Index Thermometer

For table of scale ranges, etc., see page 31.

		EACH
No. 9053	*Tycos* Index Thermometer	$71.25
	Bulb with Separable Socket Connection and 6 feet of flexible capillary connecting tubing. Scale graduated for temperature range selected within limits of 40° below zero to + 500° Fahrenheit.	
No. 9054	*Tycos* Index Thermometer	80.25
	Same as No. 9053, but for temperature range not exceeding 800° Fahrenheit.	
No. 9055	*Tycos* Index Thermometer	92.25
	Same as No. 9053, but for temperature range not exceeding 1000° Fahrenheit.	

Greater Length of Capillary Connecting Tubing

Instruments listed above will be made with connecting tubing longer than 6 feet if desired.

If total length required is 25 feet or less, add to list prices for each additional foot	$0.90
For lengths over 25 feet and not exceeding 75 feet, add to list prices 19 feet at 90 cents, and for each additional foot	3.00

FOR STEAM GENERATING PLANTS

Tycos Recording Thermometer

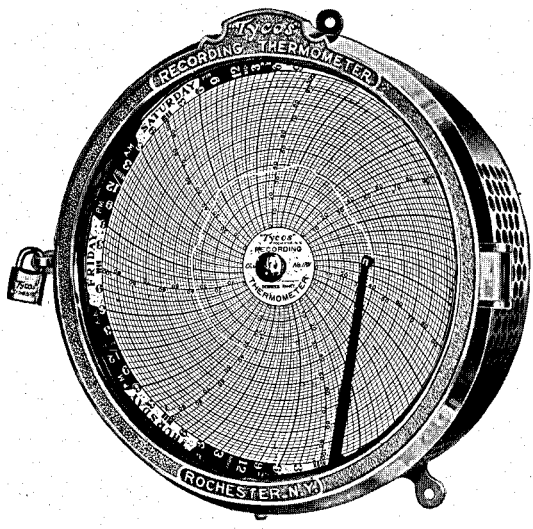
Self-contained Form

A superior instrument of handsome appearance approximately 12 inches high, rugged, practical in construction and very sensitive.

The body of the case is brass, finished in weather resisting instrument black, while the solid bronze hinged front is highly polished.

Specially adapted for recording atmospheric temperatures, or for indoor use in factories, cold storage rooms, brewery cellars, offices, work-shops, halls, clubs, hotels, dwellings, etc.

For actual size of chart, see pages 30 and 31



When ordering, state specific number of chart desired. EACH

No. 8000 *Tycos* Recording Thermometer (self-contained form) $45.00
With any temperature range chart as listed below, complete with lock and key, 100 charts and bottle of *Tycos* Recorder ink.

List of Charts for No. 8000

CHART NUMBER	TEMPERATURE RANGE FROM —	TO +	DEGREE INTERVALS	PERIOD OF REVOLUTION	TEMPERATURE SCALE
1500	—40	120	2	24 Hours	Fahrenheit
1501		10–120	2	24 Hours	Fahrenheit
1700	—40	120	2	7 Days	Fahrenheit
1701		0–100	2	7 Days	Fahrenheit
1703		10–120	2	7 Days	Fahrenheit
1704		0–130	2	7 Days	Fahrenheit

For conditions for which the Self-contained Form of Recorder is not adapted, such as chill rooms, smoke houses, drying rooms, ovens and other enclosed spaces, we recommend the Capillary Form Recorder, which permits of chart-case being placed outside the space, while the bulb can be carried to any desired location.

For complete lists of charts for capillary Recorder, see pages 30 and 31.

General Section

H&M Thermometers

for Industrial Purposes

The instruments listed in this General Section of our catalog are Standard types, adaptable to some extent to different requirements; nevertheless, it will be to the interest of the buyer to place us in position to thoroughly understand the particular conditions of use for which Thermometer is wanted.

The H&M Division

Taylor Instrument Companies

Rochester, N.Y.

"Where *Tycos* Thermometers Come From"

NEW YORK
Bank of Metropolis Building
Broadway & 16th St.

BOSTON
44
High Street

CHICAGO
Heyworth Building
29 E. Madison St.

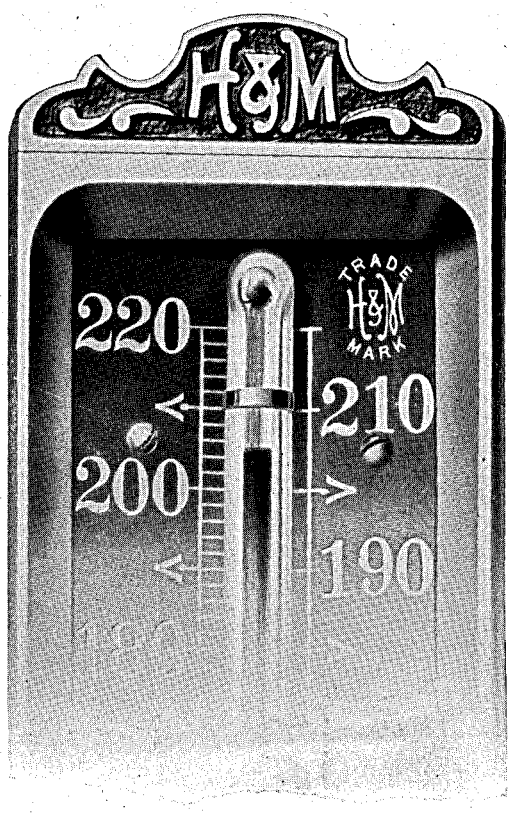
WASHINGTON, D. C
Colorado Building

PHILADELPHIA
1318 Stephen Girard
Building

TORONTO
Carlaw
Building

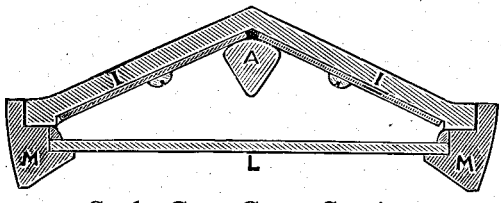
ST. LOUIS
425-6 Frisco
Building

Scale Cases



Actual proportions of 12-inch scale and case, Thermometer tube, mercury column, graduations and figures

Scale Cases are carefully machined from high-grade bronze castings, and finished to harmonize in appearance with our H&M quality, accuracy, reliability and adaptation to requirements.



Scale Case Cross Section

A—Thermometer glass tube
I-I—Scale case body
M-M—Detachable glass front frame
L—Glass front

Important References

Illustrations on the following pages represent the principal "types" and adaptations of H&M Thermometers; forms of scale cases; the different constructions of Straight and Angle Stem-forms, and the various styles of Connections and securing Devices.

H&M Thermometers are made in three scale-case sizes; respectively for 7-inch, 9-inch and 12-inch scale lengths.

In consulting Table of scale ranges below, the scale length best adapted to requirements may be determined. We recommend the 12-inch length, as per actual dimensions illustrated on page opposite; this size permitting the largest practical proportions in Thermometer tube, Mercury column and Scale markings.

Scale Ranges

Practice and determined requirements of use have established certain standard scale ranges, which are given in accompanying table in degrees Fahrenheit.

The approximate limits of these ranges are based on practical scale divisions, with graduation intervals of one (1), two (2) and five (5) degrees, according to length of scale and total range. The maximum number of spacings per inch should not exceed 18.

Table of Scale Ranges

Degrees Fahrenheit

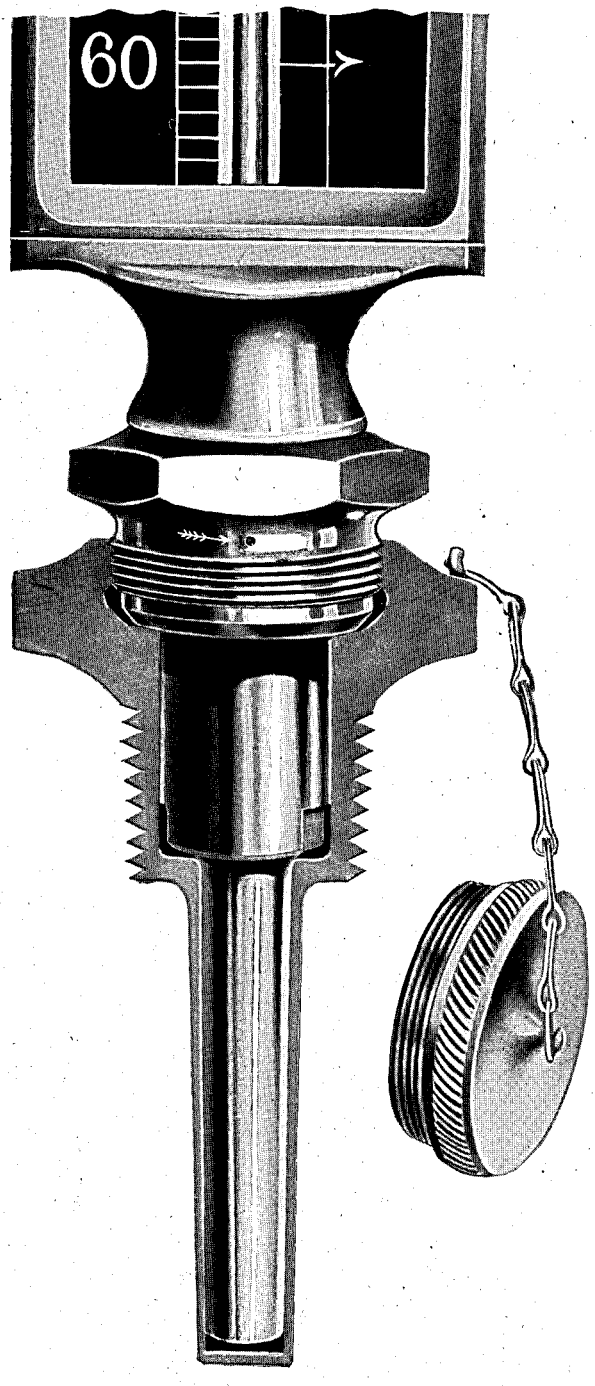
For 12-inch Scale	For 9-inch Scale	For 7-inch Scale
−40+ 100	−40+100	−40+100
30− 160	30−160	0−100
30− 240	0−100	30−160
60− 220	60−220	30−180
50− 400	30−240	30−240
160− 260	50−400	170−270
170− 270	100−250	
200 350	170−270	
100− 500	100−350	
200 650	200−650	
100 750	200−750	
200− 750		
200− 900		
200−1000		

Graduating Scales

Scales are graduated in degrees Fahrenheit unless otherwise specified, but no extra charge is made for graduating in Centigrade or degrees Réaumur.

Separable Socket Connection

Actual dimensions as illustrated



Socket shown in Cross Section

The Separable Socket Connection

The Socket is a well, bored and taper-reamed to absolute accurate dimensions, fitting corresponding tapering surfaces of Thermometer stem, which is seated to perfect contact by means of swivel-nut forming a union.

We originated this form of connection over a quarter of a century ago. A few of its practical features are:

Universal Interchangeability;

any Thermometer accurately fitting any socket of its particular style or of same size.

Great Sensitiveness

to changes of temperature, secured through contact tapering stem surfaces and mercury filling between glass bulb and metal sleeve.

Elimination of Unsatisfactory Features

of all other forms of cup or well Thermometers with liquid conductors.

Substantial Construction,

affording simple, safe and secure connection, eliminating injury to Thermometer, and permitting the instrument to be removed when desired without shutting off pressure or emptying vessel.

Great Protection to Thermometer Stem

against corrosion, as any metal, best resisting particular conditions in use, may be employed in construction of the socket.

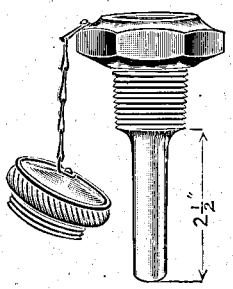
Illustrations of various styles of Standard Form Sockets are shown on pages 40 and 41.

Separable Sockets

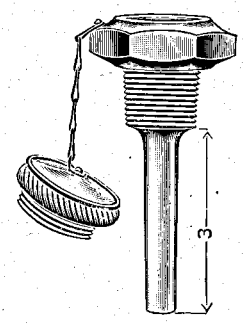
Standard Length Stem Forms

Threaded connections are 1-inch pipe size, except on Style D4, which has sharp thread for wood. Style D5 is adapted for thin walled vessels and conditions for which pipe thread is undesirable.

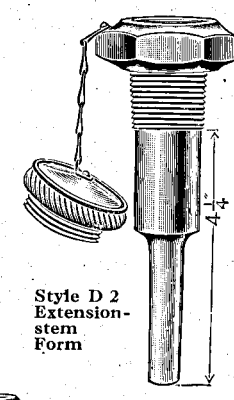
The Multiple Disk Form D15 and D30, a feature applicable to any style, is for use in superheated steam or other highly heated gases under pressure which offer poor contact.



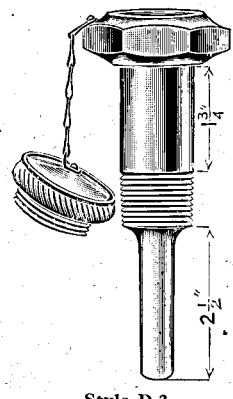
Style D
Bulb-stem Form
—for 9-inch Scale



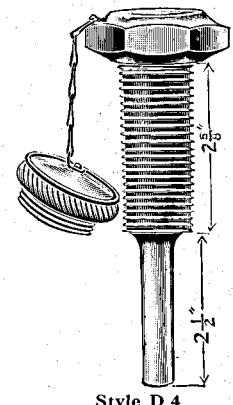
Style D 1
Bulb-stem Form
—for 12-inch Scale



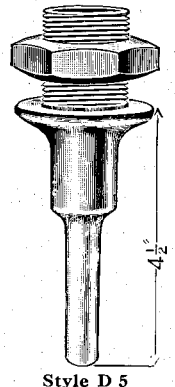
Style D 2
Extension-stem
Form



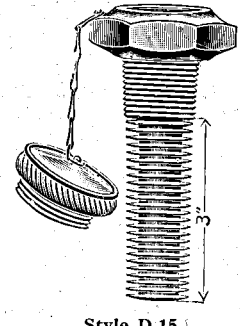
Style D 3
Extension-neck Form



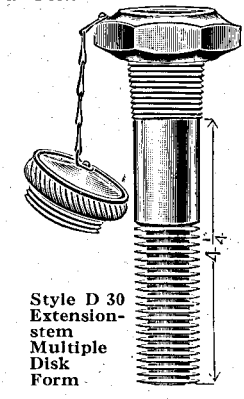
Style D 4
Wood Thread Form



Style D 5
Extension-stem
Lock-nut Form



Style D 15
Bulb-stem
Multiple Disk Form

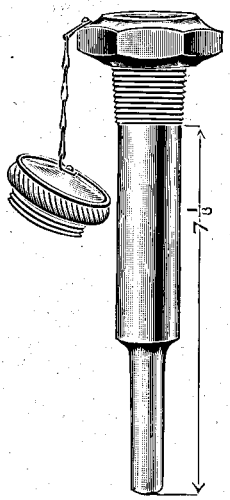


Style D 30
Extension-stem
Multiple
Disk
Form

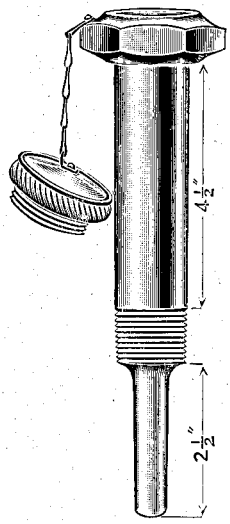
Separable Sockets

Standard Forms with Extension

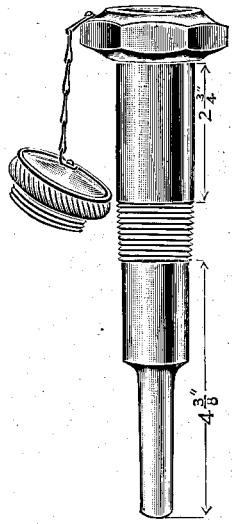
Threaded for 1-inch Pipe



Style D 6
Extension-stem
Form



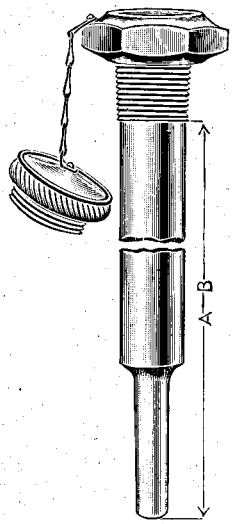
Style D 7
Extension-neck
Form



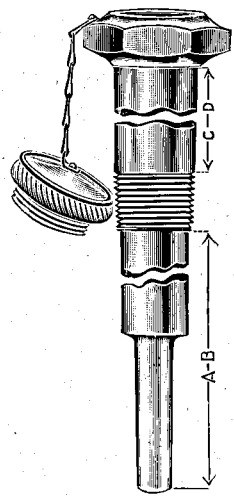
Style D 8
Combination-stem
Form

Variable Length Stem Forms

Threaded for 1¼-inch Pipe



Style D 2
Extension-stem
Form



Style D 8
Combination-stem
Form

Union Connection

Threaded Hub Forms

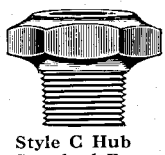
The H&M Union Connection is a modification of the well-known pipe Union. It is specially adapted for the purpose, being simple and practical, relieving the instrument of all strain in attaching. The Threaded Hub is first secured in place, then Thermometer is inserted and tight connection made by turning swivel nut on stem.

Style C Union Connection Hubs are standard either with ¾-inch, 1-inch, or 1¼-inch pipe thread. The ¾-inch thread size is supplied with 7-inch scale thermometers; for 9-inch scale we recommend the 1-inch thread, and for 12-inch scale the 1¼-inch thread.

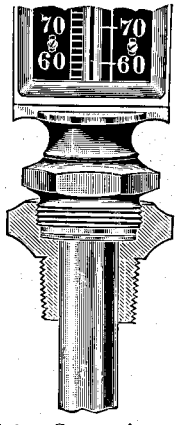
Style C2 Extension-neck Form, with standard or variable length neck between thread and wrench-head, is threaded for 1-inch pipe.

Style C3 Hub is provided with a sharp thread, suitable for inserting into wood.

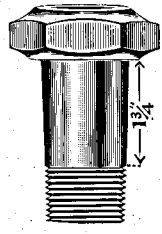
Style C4 Ventilated Form is threaded for 2-inch pipe and adapted for jacketed apparatus. Thermometer may be attached through jacket walls; the outer joint being made tight with packing, the ventilating feature preventing heat medium in jacket causing incorrect indications.



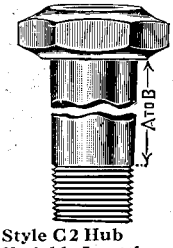
Style C Hub
Standard Form
threaded for
¾-inch, 1-inch
or 1¼-inch Pipe



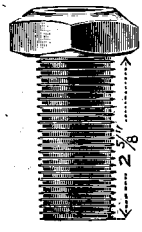
Union Connection
Pipe-threaded Hub Form.
Hub shown in
Cross Section



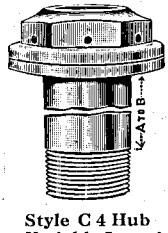
Style C 2 Hub
Standard Length
Extension-neck Form
threaded for
1-inch Pipe



Style C 2 Hub
Variable Length
Extension-neck Form
threaded for
1-inch Pipe



Style C 3 Hub
Standard Length
Wood Thread
Form



Style C 4 Hub
Variable Length
Ventilated Form
threaded for
2-inch Pipe

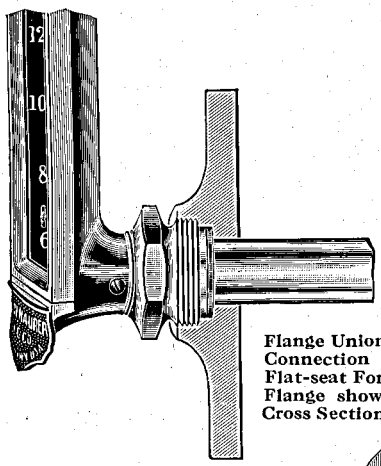
Union Connection

Flange Forms

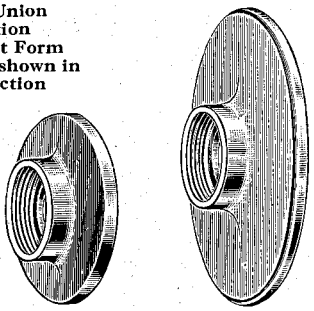
The various Forms of Flange Union Connections are of practical design to meet the different requirements for which they are adapted.

Style C6 and C7 are suitable for attaching Thermometer to thin wood or metal walls, as on air ducts and tempering chambers, enclosed spaces, kilns, ovens, etc.

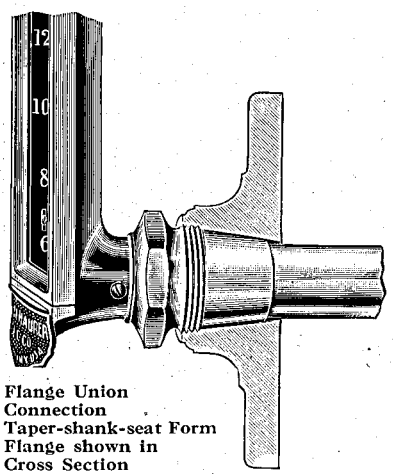
The heavy Forms may be bolted directly to steel tanks, cylinders, stills, vacuum pans, evaporators, etc.



Flange Union Connection Flat-seat Form Flange shown in Cross Section

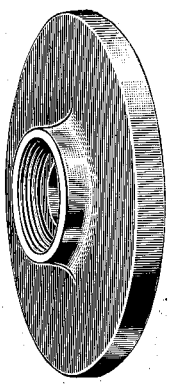


Style C 6
3-inch Flange
Flat-seat Form

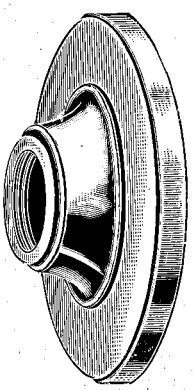


Flange Union Connection Taper-shank-seat Form Flange shown in Cross Section

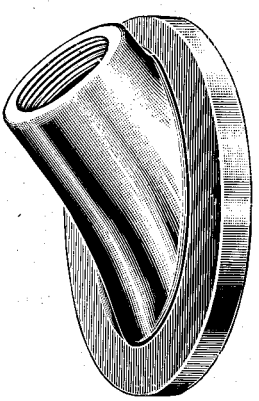
Style C 7
5-inch Flange
Flat-seat Form



Style C8
6-inch Heavy Flange
Flat-seat Form



Style C 9
6-inch Heavy Flange
Taper-shank-seat Form



Style C 10
6-inch Oblique Flange
Taper-shank-seat Form. Made also with Flat-seat

Straight Thermometer Stem Forms

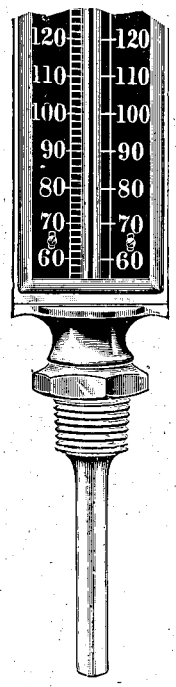
Fixed Connections

Fixed Connections for attaching in permanent position and making tight joints are of three types, viz.: Thread, Union and Separable Socket.

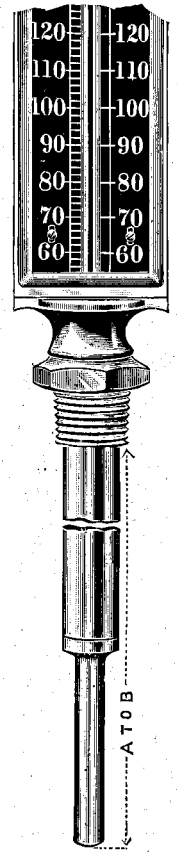
The Thread Connection consists of a pipe-threaded wrench-head, combined with bulb chamber or stem, rigidly secured to scale-case.

The Union and Separable Socket Connections in their various forms are fully illustrated and described in preceding pages.

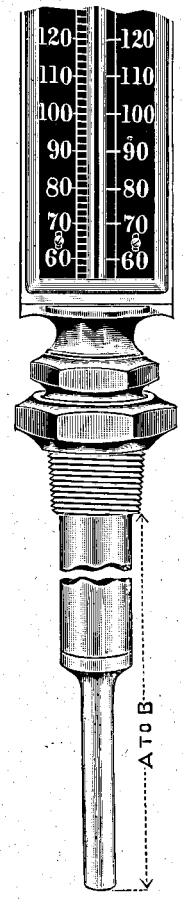
For Standard Length Stems see page opposite.



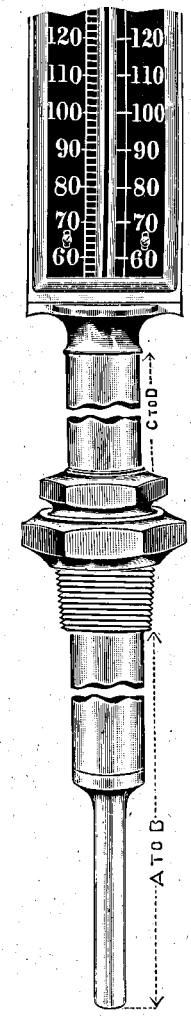
Thread Connection Standard Length Bulb Stem Form



Thread Connection Variable Length Stem Form



Union or Separable Socket Connection Variable Length Stem Form



Union or Separable Socket Connection Variable Length Combination Stem Form

Separable Socket connection standard length stems, both with and without extension, are given on pages 40 and 41.

Straight Thermometer Stem Forms

Fixed Connections

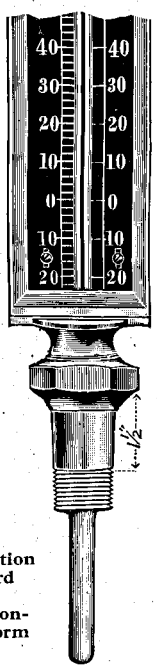
Stem Forms with Extension-neck between thread and wrench-head, are designed for attaching Thermometer to apparatus covered with insulation or lagging, and to project through pipe coverings, etc.

Other Extension-neck Forms are illustrated on pages 40 and 41.

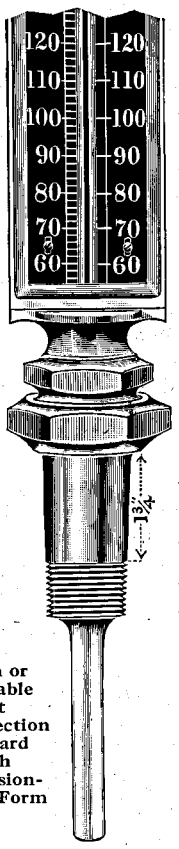
Standard Length Stems

Thread Connection standard length Bulb-stems are 2½ inches long with 7 and 9-inch scale, and 3 inches long with 12-inch scale.

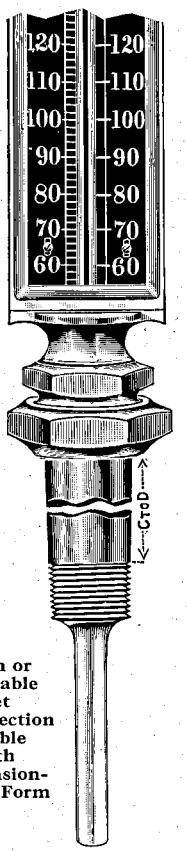
Union Connection standard length Stems are made with or without extension between thread and Bulb-stem. Bulb-stems are same length as with thread connection. Extension-stems extend 6 inches from shoulder of wrench-head, distant one inch from bottom of thread.



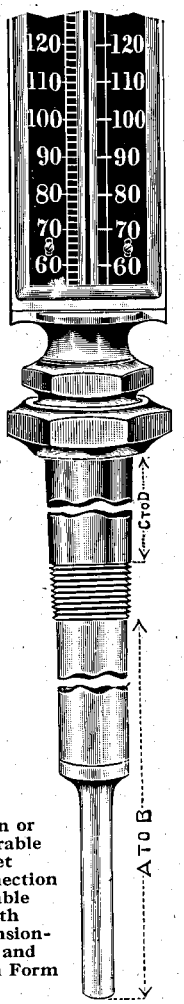
Thread Connection Standard Length Extension-neck Form



Union or Separable Socket Connection Standard Length Extension-neck Form



Union or Separable Socket Connection Variable Length Extension-neck Form



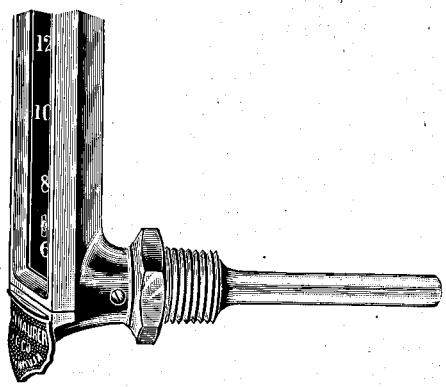
Union or Separable Socket Connection Variable Length Extension-neck and Stem Form

Separable Socket connection standard length stems, both with and without extension, are given on pages 40 and 41.

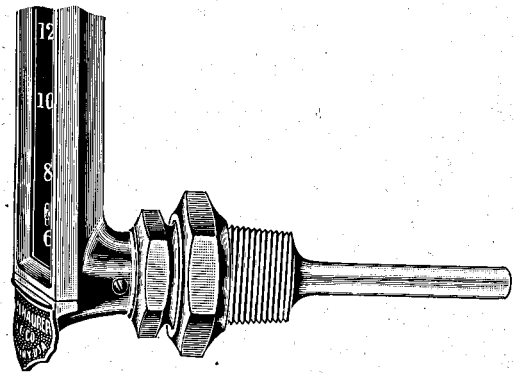
Angle Thermometer Stem Forms

Fixed Connections

See page 44 for standard length Extension-stem measurements, also pages 40 and 41 for additional Separable Socket connection forms.

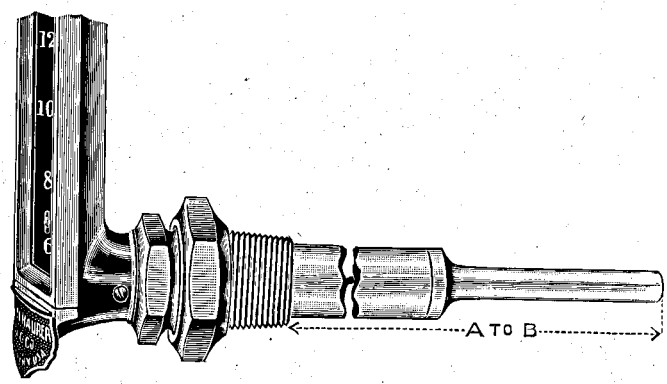


Thread Connection
Bulb Stem Form



Union or Separable Socket Connection
Bulb Stem Form

Standard length Bulb-stems extend 2½ inches below thread on 7-inch and 9-inch scale, and 3 inches on 12-inch scale thermometers.



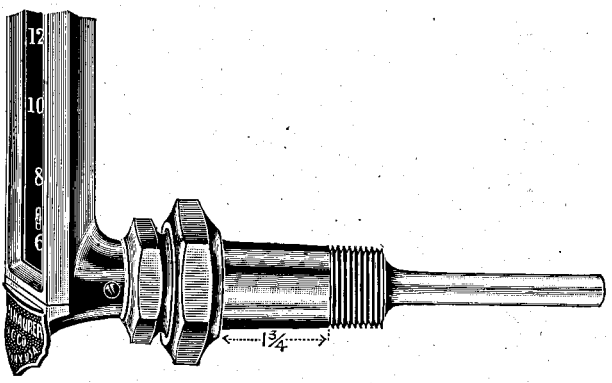
Union or Separable Socket Connection
Variable Length Stem Form

Union or Separable Socket Connection
Variable Length Combination Stem Form

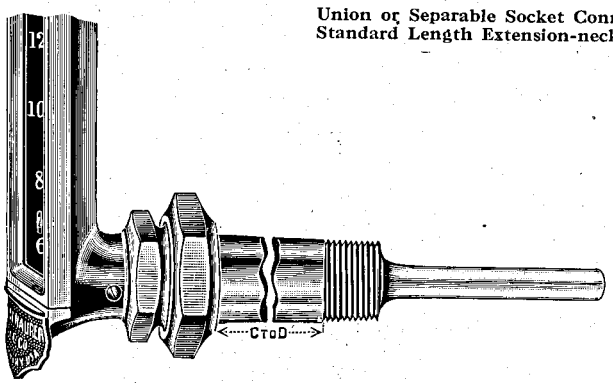
Angle Thermometer Stem Forms

Fixed Connections

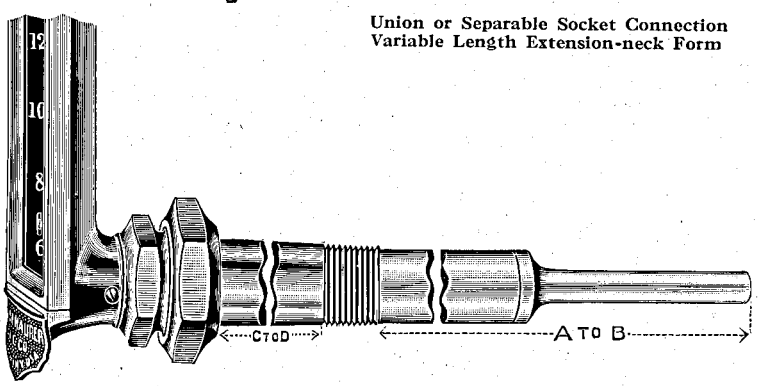
Additional Stem Forms with Separable Socket connection are shown on pages 40 and 41.



Union or Separable Socket Connection
Standard Length Extension-neck Form



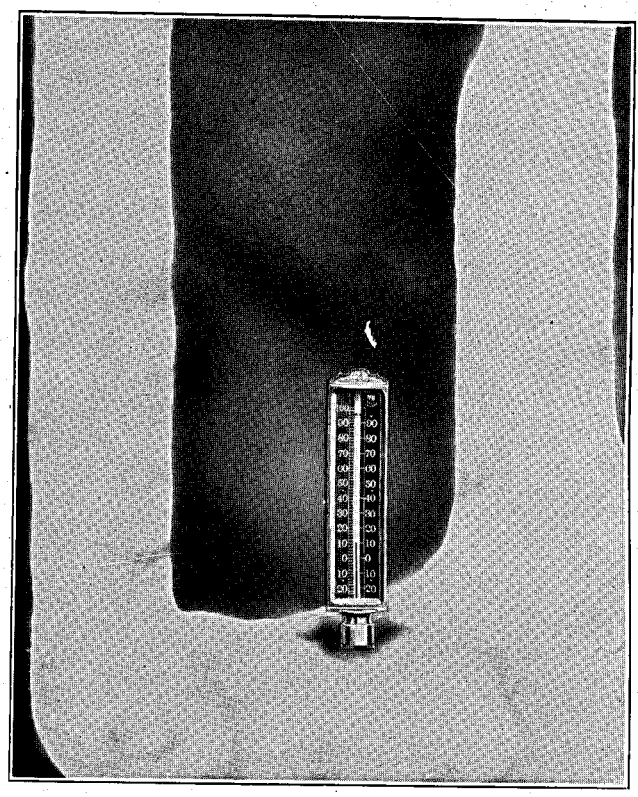
Union or Separable Socket Connection
Variable Length Extension-neck Form



Union or Separable Socket Connection
Variable Length Extension-neck and Stem Form

Insulation Feature

Insulation as applied to Mercury thermometers, is a feature of case construction developed by us in the adaptation of H&M Thermometers to the various requirements in the Industries. Its purposes and effect vary according to conditions of use.



Insulated Thermometer connected to refrigerating system. Notice heavily coated pipe, while Scale-case is frost-free

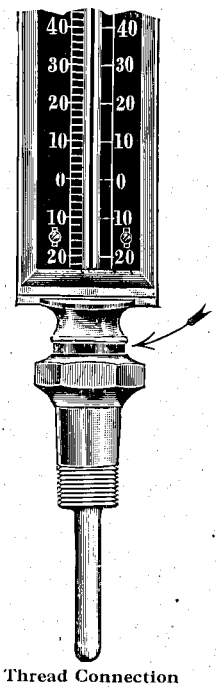
On thermometers permanently attached to Refrigerating apparatus, such as Brine and Ammonia circulating pipes in which temperatures below freezing are maintained, insulation prevents frosting up of scale-case as shown in illustration.

Applications in which the bulb contact is air or gases, or for testing temperatures of liquids lacking circulation, or materials of poor heat conducting qualities such as grains, bread dough, etc., the insulated stem insures great sensitiveness and accuracy.

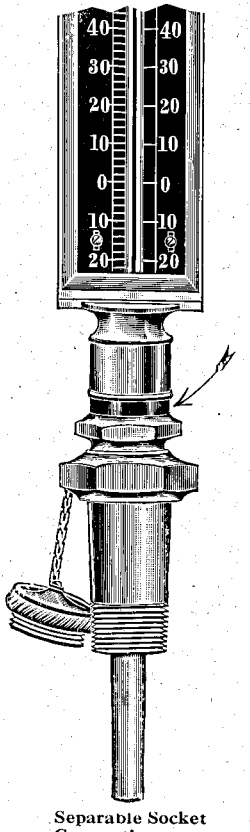
Insulated Stem Forms

The insulation feature as described on opposite page, consists in a non-conducting material forming part of the stem or case construction.

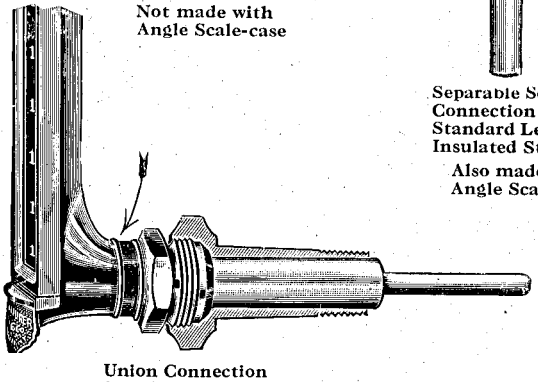
In the Standard Stem Forms shown, this non-conducting material is placed as indicated by arrows. However, different requirements necessitate modifications both in construction and materials used.



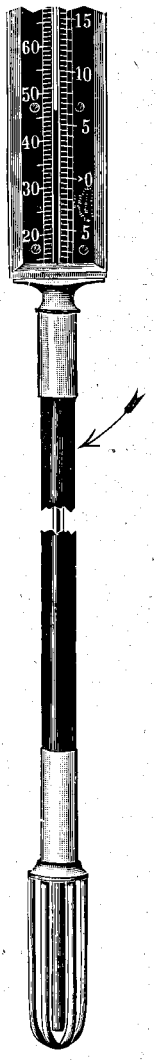
Thread Connection
Standard Length
Insulated Stem Form
Not made with
Angle Scale-case



Separable Socket
Connection
Standard Length
Insulated Stem Form
Also made with
Angle Scale-case



Union Connection
Standard Length
Insulated Form
Threaded Hub shown
in cross section

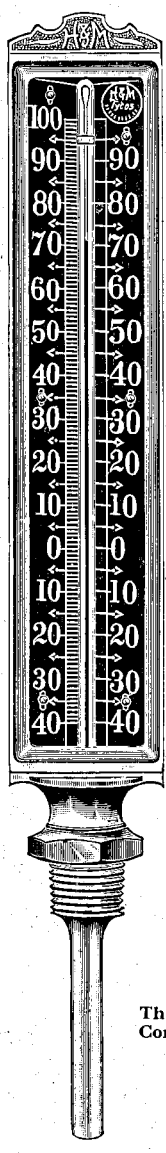


Handled
Long Stem
Standard Length
Insulated Form
14 inches long

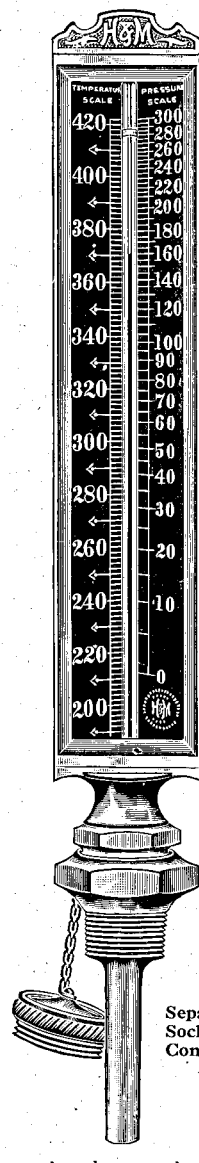
Straight Thermometers

Fixed Connections

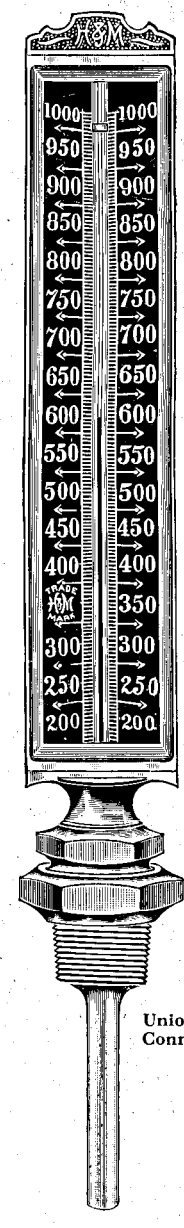
See pages 36 to 49 for detailed information and illustrations of Scale-cases, Forms of Connection, Straight and Angle Stem Forms, standard Stem Lengths, table of Scale Ranges, etc.



Thread Connection



Separable Socket Connection



Union Connection

This illustration shows scale graduated in degrees Fahrenheit and pounds pressure for saturated steam, according to Regnault's table. See page 68.

Straight Thermometers

Fixed Connections

When ordering, state specific use for which Thermometer is wanted.

Prices listed cover temperature ranges within limits of 40° below zero and +750° Fahrenheit.

For ranges above 750° see page 68.

Thread Connection

With standard length Bulb-stem 3 inches for 12-inch scale, 2½ inches for 9-inch and 7-inch scales.

		EACH
No. 100	Straight Thermometer ..... With 12-inch scale; 1-inch Thread connection; scale graduated for temperature range required.	$18.75
No. 101	Straight Thermometer ..... Same as No. 100, but with 9-inch scale and ¾-inch Thread connection.	15.00
No. 102	Straight Thermometer ..... Same as No. 100, but with 7-inch scale and ¾-inch Thread connection.	11.25

Union Connection

With standard length Bulb or Extension-stem. Bulb-stems same length a with Thread connection.

Standard length Bulb-stem is supplied unless otherwise specified. Extension-stem 6 inches long. See page 45 for detail measurements.

		EACH
No. 103	Straight Thermometer ..... With 12-inch scale, hub of Union threaded 1-inch; scale graduated for temperature range required.	$22.50
No. 104	Straight Thermometer ..... Same as No. 103, but with 9-inch scale and 1-inch threaded hub.	18.75
No. 105	Straight Thermometer ..... Same as No. 103, but with 7-inch scale and ¾-inch threaded hub.	15.00

Nos. 103, 104, and 105 will be furnished with standard length Extension-stem and style C2 Hub in place of style C Hub if so specified.

Separable Socket Connection

With standard length Bulb, Extension-stem or Extension Neck-stem. For measurements see pages 40 and 41.

Standard length Bulb-stem is supplied unless otherwise specified.

		EACH
No. 106	Straight Thermometer ..... With 12-inch scale, 1-inch pipe threaded socket; scale graduated for temperature range required.	$26.25
No. 107	Straight Thermometer ..... Same as No. 106, but with 9-inch scale.	22.50
No. 108	Straight Thermometer ..... Same as No. 106, but with 7-inch scale.	18.75

Nos. 106, 107 and 108 will be furnished with Extension-stem lock-nut form Socket style D5 if so specified.

Extras

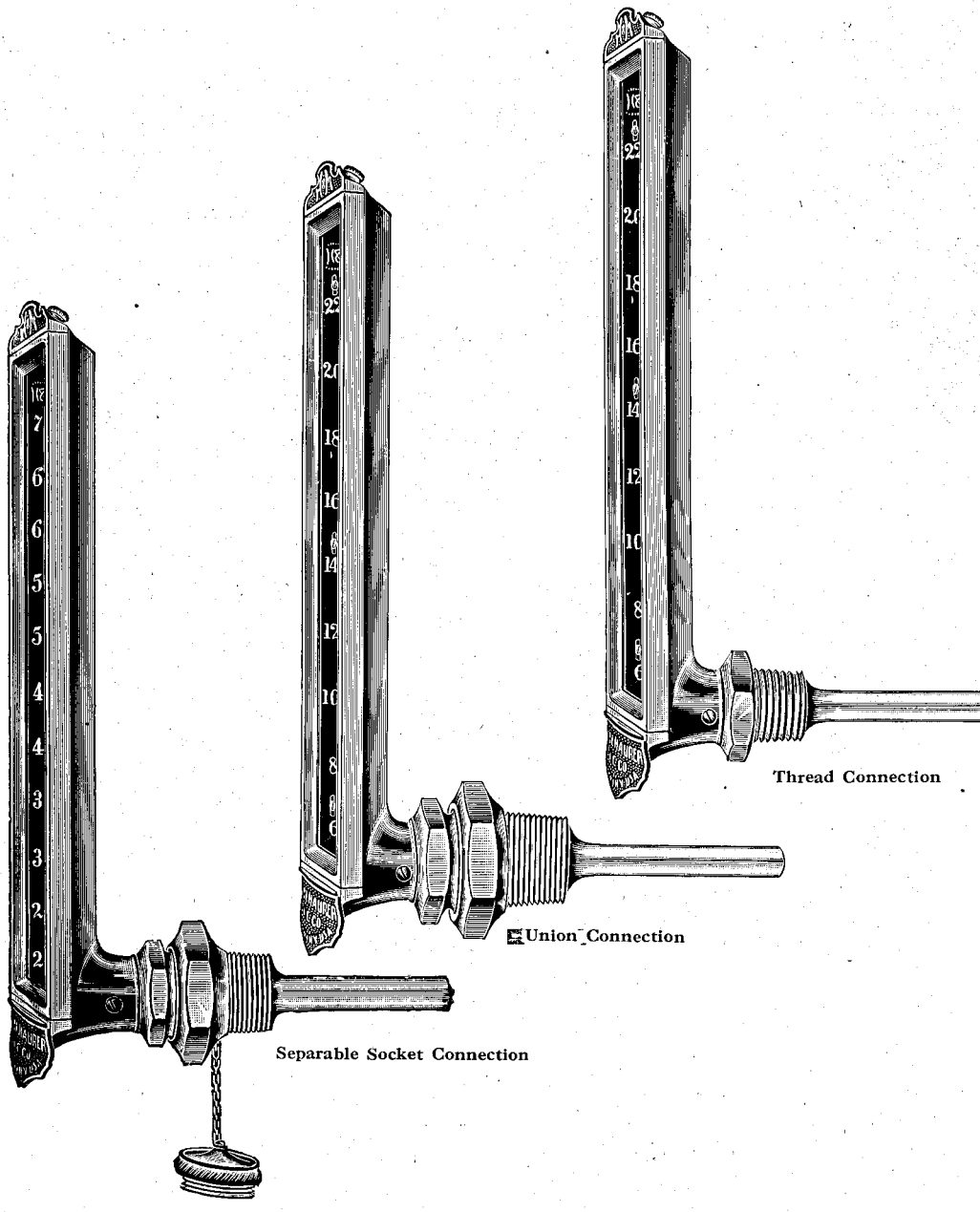
	ADD TO LIST
Longer Stem with Thread or Union Connection ..... Each additional 6 inches, or less.	$2.25
Longer Stem with Separable Socket Connection ..... Each additional 6 inches, or less.	3.75

For extras of other modifications and special features, see page 68.

Angle Thermometers

Fixed Connections

See pages 36 to 49 for detailed information and illustrations of Scale-cases, Forms of Connection, Straight and Angle Stem Forms, standard Stem Lengths, table of Scale Ranges, etc.



Thread Connection

Union Connection

Separable Socket Connection

Angle Thermometers

Fixed Connections

When ordering, state specific use for which Thermometer is wanted.

Prices listed cover temperature ranges within limits of 40° below zero and +750° Fahrenheit.

For ranges above 750° see page 68.

Thread Connection

With standard length Bulb-stem, 3 inches for 12-inch scale, 2½ inches for 9-inch and 7-inch scales.

EACH

No. 114 Angle Thermometer $22.50
With 12-inch scale; 1-inch thread connection; scale graduated for temperature range required.

No. 115 Angle Thermometer 18.75
Same as No. 114, but with 9-inch scale and ¾-inch thread connection.

No. 116 Angle Thermometer 15.00
Same as No. 114, but with 7-inch scale and ¾-inch thread connection.

Union Connection

With standard length Bulb or Extension-stem. Bulb-stems same length as with thread connection.

Standard length Bulb-stem is supplied unless otherwise specified. Extension-stem 6 inches long. See page 45 for detail measurements.

EACH

No. 117 Angle Thermometer $26.25
With 12-inch scale, hub of Union threaded 1-inch; scale graduated for temperature range required.

No. 118 Angle Thermometer 22.50
Same as No. 117, but with 9-inch scale and 1-inch threaded hub.

No. 119 Angle Thermometer 18.75
Same as No. 117, but with 7-inch scale and ¾-inch threaded hub.

Nos. 117, 118 and 119 will be furnished with standard length Extension-stem with style C2 Hub in place of Style C Hub if so specified.

Separable Socket Connection

With standard length Bulb, Extension-stem or Extension Neck-stem. For measurements see pages 40 and 41.

Standard length Bulb-stem is supplied unless otherwise specified.

EACH

No. 120 Angle Thermometer $30.00
With 12-inch scale; 1-inch pipe threaded socket; scale graduated for temperature range required.

No. 121 Angle Thermometer 26.25
Same as No. 120, but with 9-inch scale.

No. 122 Angle Thermometer 22.50
Same as No. 120, but with 7-inch scale.

Nos. 106, 107 and 108 will be furnished with Extension-stem lock-nut form Socket, style D5 if so specified.

Extras

ADD TO LIST

Longer Stem with Thread or Union Connection ..... $ 2.25
Each additional 6 inches, or less.

Longer Stem with Separable Socket Connection 3.75
Each additional 6 inches, or less.

For extras of other modifications and special features, see page 68.

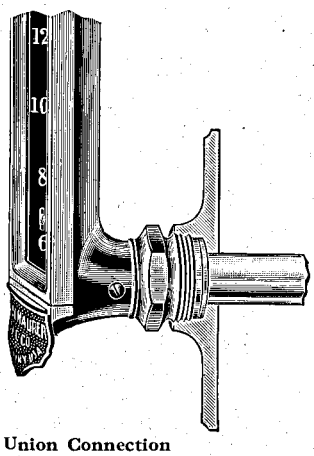
Angle Thermometers

Flange Connections

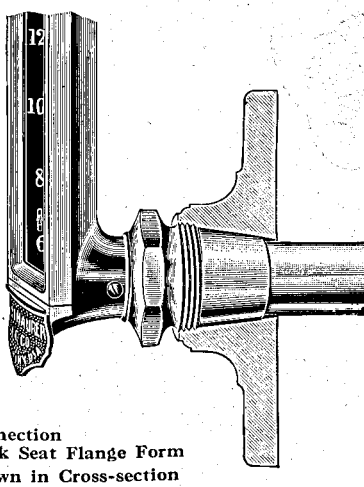
The Flange Union Connection is designed for attaching Thermometers to surfaces not suitable for tapping with pipe thread, such as wood or thin sheet metal walls of ducts, enclosed spaces, ovens, etc. For bolting to steel tanks, the heavy style either in bronze or cast-iron will make a safer connection than the pipe thread.

The Taper-shank seat Form is adapted for apparatus operated under vacuum or pressure; its proportions and finish harmonize with other fittings. The Taper-shank is carefully ground into the Flange-socket, insuring a vacuum or pressure-tight joint without packing and great rigidity to Thermometer-stem.

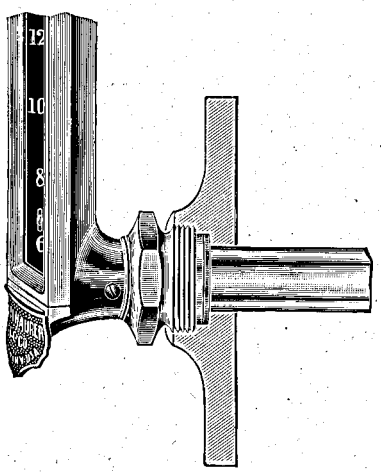
Flanges shown in cross section are machined from high-grade bronze castings, and will be drilled to any bolt-circle desired when specified.



Union Connection
Flat Seat Flange Form
Flange shown in Cross-section
5 inches diameter



Union Connection
Taper-shank Seat Flange Form
Flange shown in Cross-section
6 inches diameter



Union Connection
Flat Seat Heavy Flange Form
Flange shown in Cross-section
6 inches diameter

Angle Thermometers

Flange Connections

When ordering, state specific use for which Thermometer is wanted.

Prices listed cover temperature ranges within limits of 40° below zero and +750° Fahrenheit.

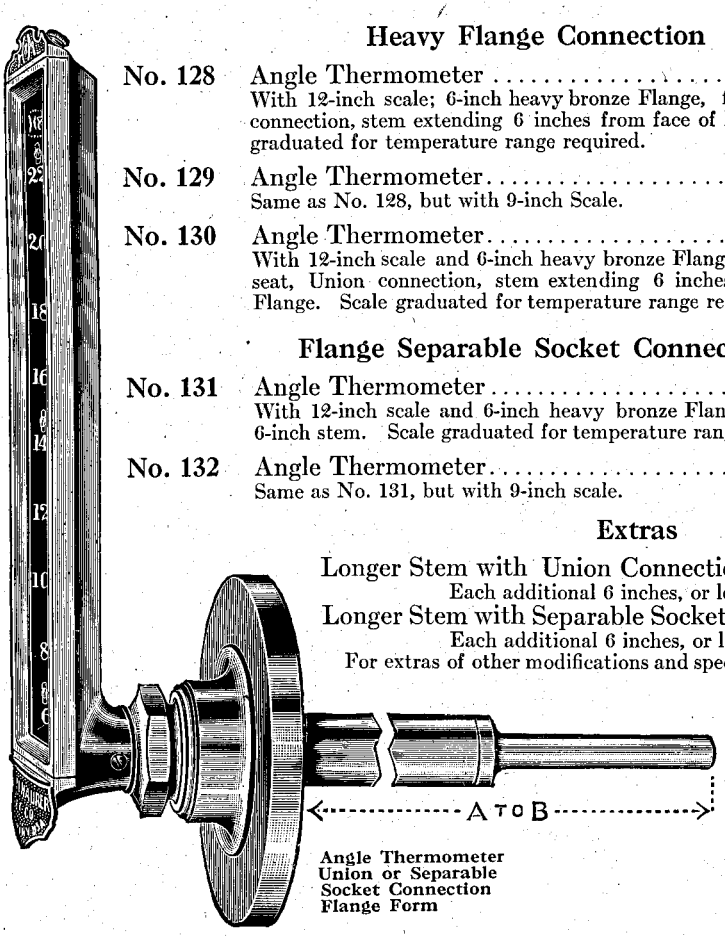
For ranges above 750°, see page 68.

Flange Union Connection

EACH

No. 126 Angle Thermometer $26.25
With 12-inch scale; 5-inch bronze Flange, flat-seat Union connection, stem extending 6 inches from face of Flange. Scale graduated for temperature range required.

No. 127 Angle Thermometer 22.50
Same as No. 126, but with 9-inch scale.
Nos. 126 and 127 will be furnished with 6-inch heavy cast-iron Flange, or 3-inch bronze Flange in place of 5-inch Flange if so specified.



Angle Thermometer
Union or Separable
Socket Connection
Flange Form

Heavy Flange Connection

No. 128 Angle Thermometer 28.50
With 12-inch scale; 6-inch heavy bronze Flange, flat-seat Union connection, stem extending 6 inches from face of Flange. Scale graduated for temperature range required.

No. 129 Angle Thermometer 24.75
Same as No. 128, but with 9-inch Scale.

No. 130 Angle Thermometer 34.50
With 12-inch scale and 6-inch heavy bronze Flange, taper-shank seat, Union connection, stem extending 6 inches from face of Flange. Scale graduated for temperature range required.

Flange Separable Socket Connection

No. 131 Angle Thermometer 32.25
With 12-inch scale and 6-inch heavy bronze Flange socket with 6-inch stem. Scale graduated for temperature range required.

No. 132 Angle Thermometer 28.50
Same as No. 131, but with 9-inch scale.

Extras

ADD TO LIST

Longer Stem with Union Connection $2.25
Each additional 6 inches, or less.

Longer Stem with Separable Socket Connection 3.75
Each additional 6 inches, or less.

For extras of other modifications and special features, see page 68.

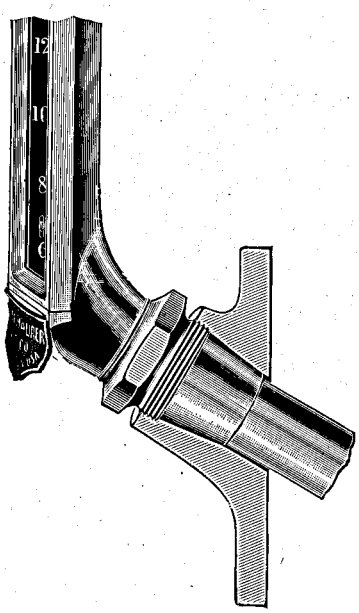
Angle Thermometers

Oblique Flange Connections

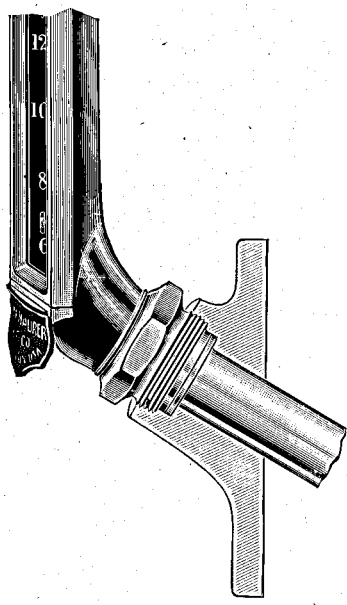
For Thermometers to extend in a downward slanting direction from the vertical shell, either for the purpose of projecting into the liquid as in evaporator and multiple effects; or to clear obstructions, such as steam coils in vacuum pans, etc., the H&M Oblique Flange connection is the simplest and most practical for attaching the instrument. The Taper-shank seat Form, with shank carefully ground into the flange seat, is preferable, securing not only a perfect vacuum tight joint, but great rigidity of Thermometer stem.

Flanges shown in cross section are machined from high grade Bronze castings and, when specified, will be drilled to any bolt circle designed, also face curved to conform to circumference of apparatus if required.

See pages 36 to 49 for detailed information and illustrations of Scale-cases, Forms of Connections, Straight and Angle Stem Forms, standard Stem Lengths, table of Scale Ranges, etc.



6-inch Oblique Flange
Union Connection
Taper-shank Seat Form
Flange shown in Cross Section



6-inch Oblique Flange
Union Connection
Flat Seat Form
Flange shown in Cross Section

Angle Thermometers

Oblique Flange Connections

When ordering, state specific use for which thermometer is wanted. Specifications must also give the degree of angle formed by intersection of center line of Thermometer-stem with vertical surface of apparatus. See illustration of application on page 58.

Prices listed cover temperature ranges within the limits of 40° below zero and +750° Fahrenheit.

For ranges above 750° see page 68.

Oblique Flange Union Connection

		EACH
No. 135	Angle Thermometer..... With 12-inch scale, 6-inch Oblique bronze Flange, taper-shank seat Union connection, stem extending 6 inches from face of Flange; scale graduated for temperature range required.	$39.00
No. 136	Angle Thermometer..... Same as No. 135, but with flat-seat Union connection.	33.00
No. 137	Angle Thermometer..... Same as No. 135, but with 6-inch cast-iron Flange, flat-seat Union connection.	30.75
No. 138	Angle Thermometer..... With 9-inch scale; 6-inch Oblique bronze Flange, flat-seat Union connection, stem extending 6 inches from face of Flange; scale graduated for temperature range required.	29.25
No. 139	Angle Thermometer..... Same as No. 138, but with 6-inch cast-iron Flange, flat-seat Union connection.	27.00

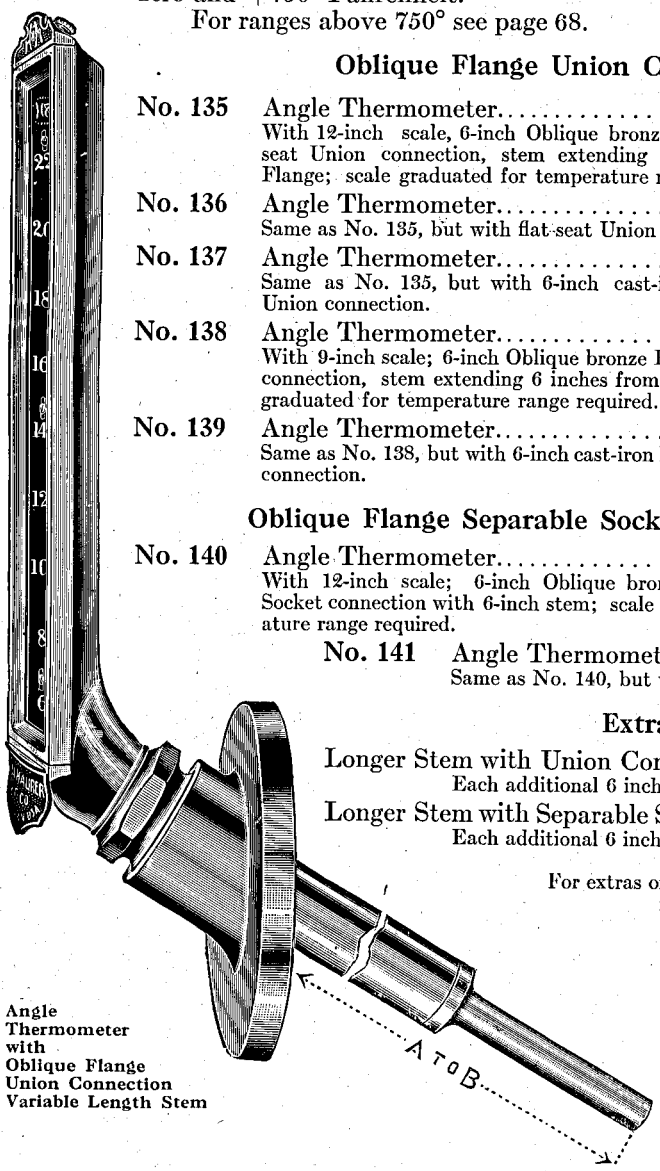
Oblique Flange Separable Socket Connection

No. 140	Angle Thermometer..... With 12-inch scale; 6-inch Oblique bronze Flange, Separable Socket connection with 6-inch stem; scale graduated for temperature range required.	36.75
No. 141	Angle Thermometer..... Same as No. 140, but with 9-inch scale.	33.00

Extras

	ADD TO LIST
Longer Stem with Union Connection..... Each additional 6 inches, or less.	$2.25
Longer Stem with Separable Socket Connection Each additional 6 inches, or less.	3.75

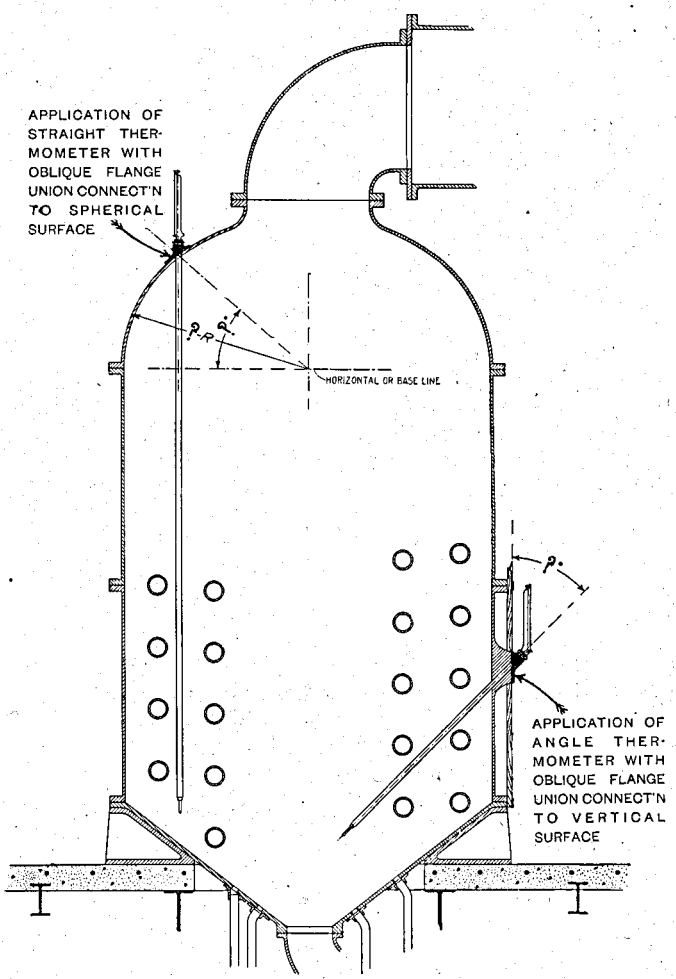
For extras of other modifications and special features, see page 68.



Angle Thermometer with Oblique Flange Union Connection Variable Length Stem

Oblique Flange Connections

When a Straight thermometer is to be applied to a spherical surface Apparatus, such as the dome of a vacuum pan, evaporator, etc., the Oblique Flange Union Connection will be found a simple and practical means of attaching the instrument. The Taper-shank-seat Form is preferable, insuring firm seating and great rigidity to Thermometer stem.



Application of Straight Thermometer to Spherical surface; also, Oblique Stem Angle to vertical wall, showing [method of determining measurements of degree of angle required for Oblique Flanges.

Straight Thermometers

Oblique Flange Connections

In ordering, state specific use for which Thermometer is wanted. Specify must also give diameter of Apparatus, the radius of the spherical surface of dome, and the degree of the angle formed by the horizontal or base line of the Flange and the radial line extending from the common center, the latter intersecting the point at which Thermometer is to be attached. See page opposite.

See pages 36 to 49 for detailed information and illustrations of Scale-case, Forms of Connections, Straight and Angle Stem Forms, standard Stem Lengths, table of Scale Ranges, etc.

Prices listed cover temperature ranges within limits of 40° below zero and +750° Fahrenheit.

For ranges above 750° see page 68.

Oblique Flange Union Connection

EACH

No. 144 Straight Thermometer $35.25
With 12-inch scale; 6-inch Oblique bronze Flange; Taper-shank seat Union connection, stem extending 6 inches from face of Flange; scale graduated for temperature range required.

No. 145 Straight Thermometer 29.25
Same as No. 144, but with flat-seat Union connection.

No. 146 Straight Thermometer 31.50
With 9-inch scale; 6-inch Oblique bronze Flange, Taper-shank seat Union connection, stem extending 6 inches from face of Flange; scale graduated for temperature range required.

No. 147 Straight Thermometer 25.50
Same as No. 146, but with flat-seat Union connection.

Oblique Flange Separable Socket Connection

No. 148 Straight Thermometer $33.00
With 12-inch scale; 6-inch Oblique bronze Flange socket with 6-inch stem; scale graduated for temperature range required

No. 149 Straight Thermometer $29.25
Same as No. 148, but with 9-inch scale.

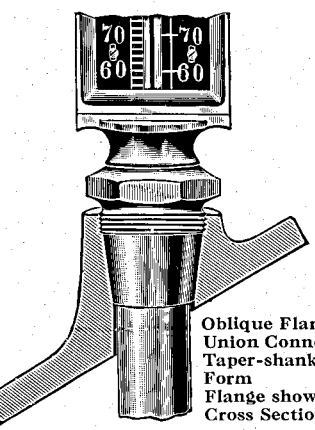
Extras

ADD TO LIST

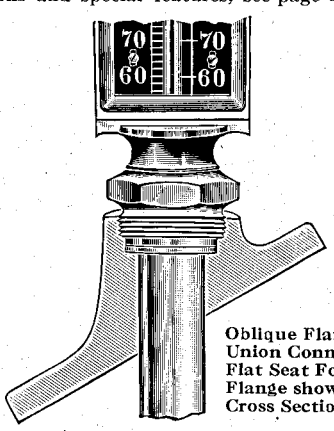
Longer Stem with Union Connection $2.25
Each additional 6 inches, or less.

Longer Stem with Separable Socket Connection .. 3.75
Each additional 6 inches, or less.

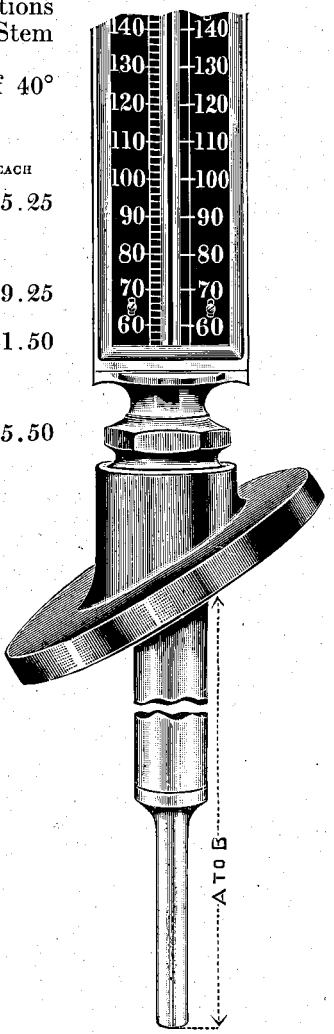
For extras of other modifications and special features, see page 68.



Oblique Flange Union Connection Taper-shank Seat Form Flange shown in Cross Section



Oblique Flange Union Connection Flat Seat Form Flange shown in Cross Section



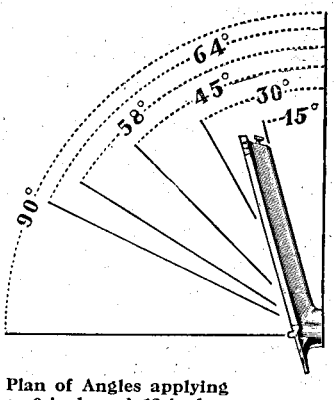
Straight Thermometer Oblique Flange Union Connection Variable length Stem

Angle Thermometers

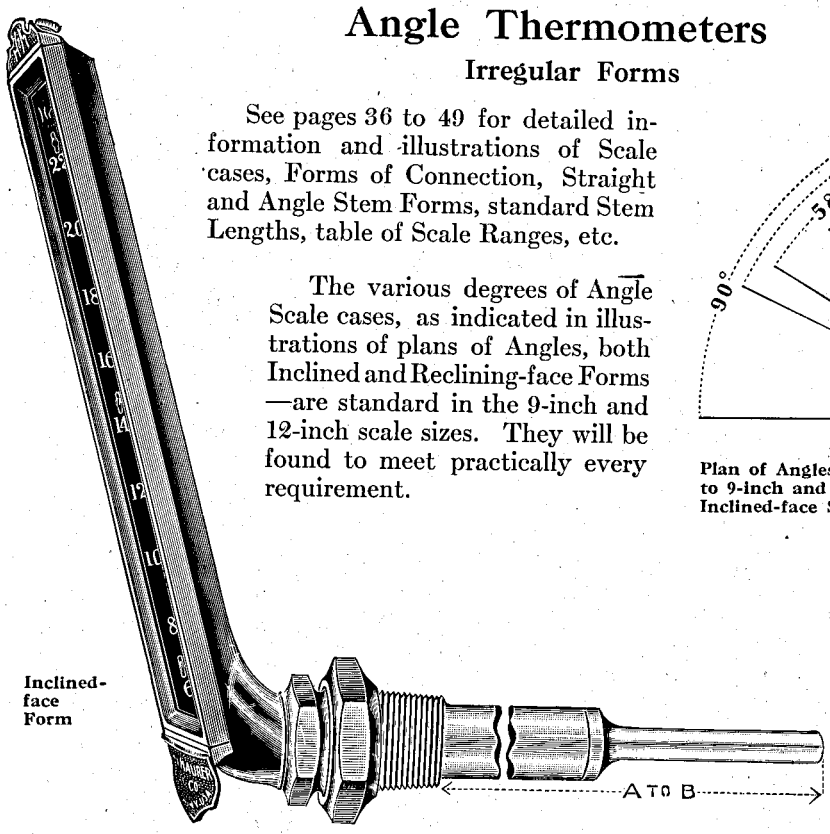
Irregular Forms

See pages 36 to 49 for detailed information and illustrations of Scale cases, Forms of Connection, Straight and Angle Stem Forms, standard Stem Lengths, table of Scale Ranges, etc.

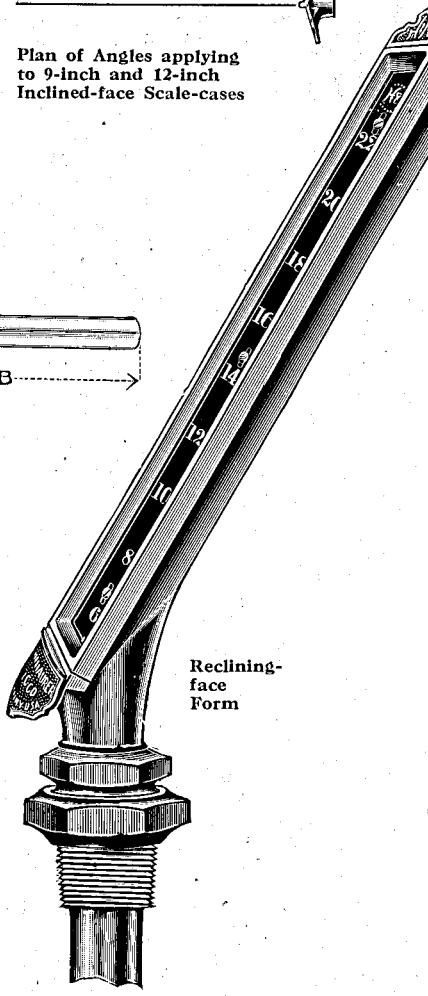
The various degrees of Angle Scale cases, as indicated in illustrations of plans of Angles, both Inclined and Reclining-face Forms —are standard in the 9-inch and 12-inch scale sizes. They will be found to meet practically every requirement.



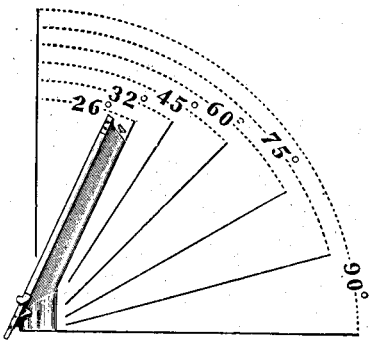
Plan of Angles applying to 9-inch and 12-inch Inclined-face Scale-cases



Inclined-face Form



Reclining-face Form



Plan of Angles applying to 9-inch and 12-inch Reclining-face Scale-cases

Angle Thermometers

Irregular Forms

Angle Thermometers with Scale-case modifications as illustrated on opposite page will greatly facilitate observation of Mercury column, which can be brought into line of vision by selecting proper degree of Angle-case to suit the elevation or depression of location with reference to point of observation.

When ordering, state specific use for which Thermometer is wanted. Specifications should also give degree of angle desired by reference to plan of Angles, or state the distance above or below line of vision where Thermometer will be attached.

Prices listed cover temperature ranges within limits of 40° below zero and + 750° Fahrenheit.

For ranges above 750° see page 68.

Union Connection

With standard length Bulb or Extension stem. For measurements see page 45. Standard length Bulb-stem is supplied unless otherwise specified.

		EACH
No. 150	Angle Thermometer ..... With 12-inch scale and face Inclined or Reclining any degree as per plan of Angles. (See opposite page). 1-inch pipe threaded hub and scale graduated for temperature range required.	$26.25
No. 151	Angle Thermometer ..... Same as No. 150, but with 9-inch scale. Nos. 150 and 151 will be furnished with 5-inch bronze or 6-inch cast iron Flange flat-seat Union connection in place of threaded hub, if so specified.	22.50
No. 152	Angle Thermometer ..... With 12-inch scale and face Inclined or Reclining any degree as per plan of Angles. (See opposite page). 6-inch heavy bronze Flange, flat-seat Union connection and scale graduated for temperature range required.	28.50
No. 153	Angle Thermometer ..... Same as No. 152, but with 9-inch scale.	24.75
No. 154	Angle Thermometer ..... Same as No. 152, but with 6-inch heavy bronze Flange, Taper-shank seat Union connection.	34.50

Separable Socket Connection

With standard length Bulb, Extension-stem or Extension-neck stem. For measurements, see pages 40 and 41. Standard length Bulb-stem is supplied unless otherwise specified.

		EACH
No. 155	Angle Thermometer ..... With 12-inch scale, face Inclined or Reclining any degree as per plan of Angles. (See opposite page.) 1-inch pipe threaded socket and scale graduated for temperature range required.	$30.00
No. 156	Angle Thermometer ..... Same as No. 155, but with 9-inch scale.	26.25

Extras

	ADD TO LIST
Longer Stem with Union Connection ..... Each additional 6 inches, or less.	$2.25
Longer Stem with Separable Socket Connection ..... Each additional 6 inches, or less.	3.75

For extras of other modifications, and special features, see page 68.

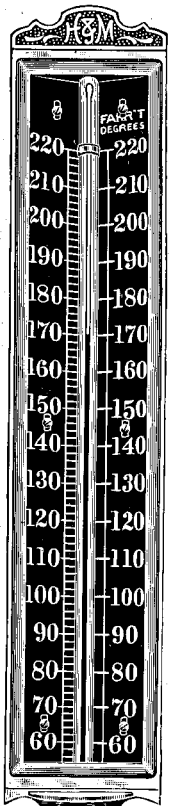
Side Angle Forms

Side-angle Thermometers are designed for applications where on account of inaccessibility of location for reading, or difficulty in observing the Mercury column, the Right Angle form is impractical.

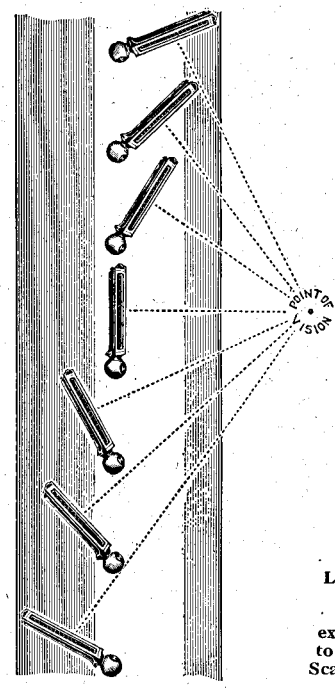
The standard forms are the Right Side-angle, stem extending from right of scale-case and face parallel with it, and the Left Side-angle, with stem to left of scale-case and parallel face. Side-angle thermometers can be constructed with face of case turned away from parallel with stem, either to right or left, facing point of vision at any degree of circle.

By referring to illustration of application below, it will be noticed that the face of scale can be fixed in any position desired.

See pages 36 to 49 for detailed information and illustrations of Scale-cases, Forms of Connections, Straight and Angle Stem Length Forms, Standard Stem Lengths, table of Scale Ranges, etc.

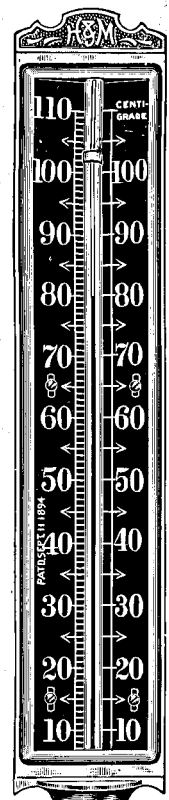


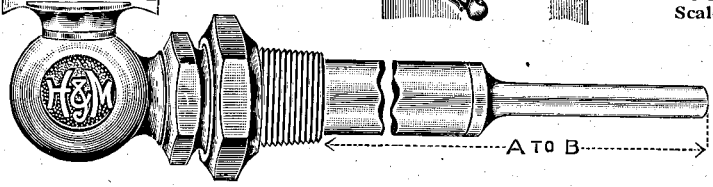
Showing application of Side-angle

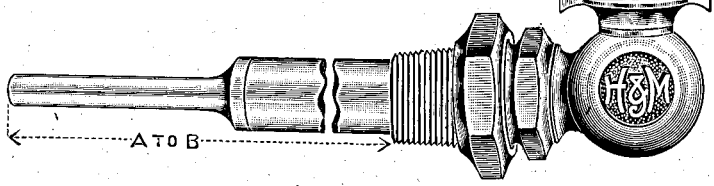


Right Side Form Stem extending to Right of Scale-case

Left Side Form Stem extending to Left of Scale Face







Side Angle Forms

When ordering, state specific use for which Thermometer is wanted.

Prices listed cover temperature ranges within limits of 40° below zero and +750° Fahrenheit.

For ranges above 750°, see page 68.

Union Connection

With standard length Bulb or Extension stem. See page 45 for detail measurements.

Standard Bulb-stem is supplied unless otherwise specified.

		EACH
No. 160	Right Side-angle Thermometer ..... With 12-inch scale, hub of Union with 1-inch pipe thread and scale graduated for temperature range required.	$26.25
No. 161	Left Side-angle Thermometer ..... Otherwise same as No. 160.	26.25
No. 162	Right Side-angle Thermometer ..... With 9-inch scale, hub of Union with 1-inch pipe thread and scale graduated for temperature range required.	22.50
No. 163	Left Side-Angle Thermometer ..... Otherwise same as No. 162. Nos. 160, 161, 162 and 163 will be furnished with either 3 or 5-inch bronze Flange or 6-inch cast-iron Flange flat-seat Union connection in place of threaded hub, if so specified.	22.50
No. 164	Right Side-angle Thermometer ..... With 12-inch scale, 6-inch heavy bronze Flange, flat seat Union connection with stem extending 6 inches from face of flange, and scale graduated for temperature range required.	28.50
No. 165	Left Side-angle Thermometer ..... Otherwise same as No. 164.	28.50
No. 166	Right Side-angle Thermometer ..... Otherwise same as No. 164, but with 6-inch heavy bronze Flange Taper-shank seat Union connection.	34.50
No. 167	Left Side-angle Thermometer ..... Otherwise same as No. 164, but with 6-inch heavy bronze Flange, Taper-shank seat Union connection.	34.50

Separable Socket Connection

With standard length Bulb, Extension-stem or Extension Neck-stem. See pages 40 and 41 for detail measurements.

Standard length Bulb-stem is supplied unless otherwise specified.

		EACH
No. 168	Right Side-angle Thermometer ..... With 12-inch scale, 1-inch pipe threaded Socket and scale graduated for temperature range required.	$30.00
No. 169	Left Side-angle Thermometer ..... Otherwise same as No. 168.	30.00
No. 170	Right Side-angle Thermometer ..... With 9-inch scale, 1-inch pipe threaded Socket and scale graduated for temperature range required.	26.25
No. 171	Left Side-angle Thermometer ..... Otherwise same as No. 170.	26.25

Extras

	ADD TO LIST
Longer Stem with Union Connection ..... Each additional 6 inches, or less.	$2.25
Longer Stem with Separable Socket Connection ..... Each additional 6 inches, or less.	3.75

For extras of other modifications and special features, see page 68.

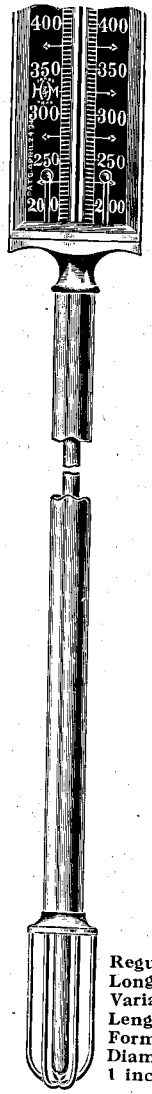
Long Stem Forms

Long Stem Thermometers find extensive use in a multitude of manufacturing processes requiring open vessels such as kettles, tubs, vats, tanks, etc., either covered or uncovered.

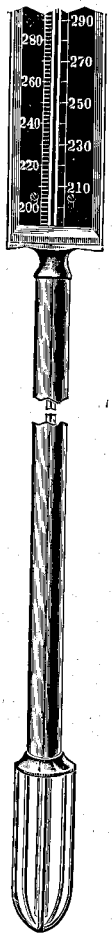
The standard Stem Forms shown are of practical construction and adaptable to varying conditions.

The securing devices illustrated on page 66 are designed for convenient supporting or attaching to apparatus.

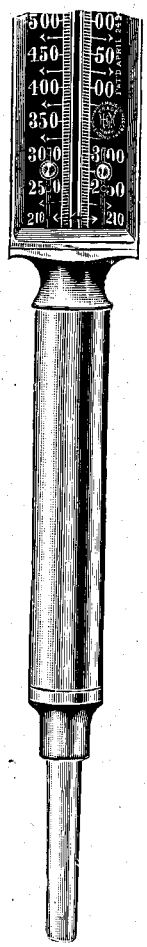
The handle form is adapted for intermittent use for testing, or for taking hold when thermometer is used in high temperatures.



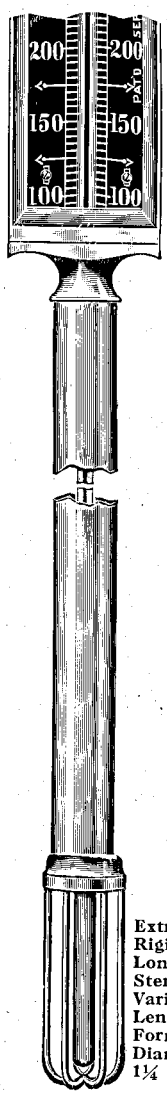
Regular Long Stem Variable Length Form Diameter 1 inch



Handle Long Stem Variable Length Form Diameter ¾ inch

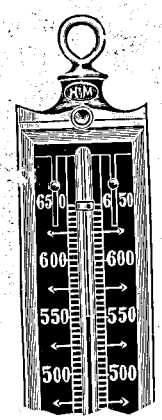


Molten Metal Long Stem Standard Length Form Diameter, 1¼ inch Length, 18 inches



Extra Rigid Long Stem Variable Length Form Diameter 1¼ inch

Straight Long Stem Thermometers



Straight Long Stem Scale-case Form

For detailed information, illustration of Scale-case' table of Scale Ranges, etc., see pages 36 and 37.

When ordering, state specific use for which Thermometer is wanted.

Prices listed cover temperature ranges within limits of 40° below zero and +650° Fahrenheit.

For ranges above 650° see page 68.

Adjustable Connections (See Page 66)

Regular form stem with any style Clamp-hook or Flange. Style J Clamp-hook will be furnished unless otherwise specified.

Hand Form Scale-case

		EACH
No. 175	Straight Long Stem Thermometer .... With 12-inch Scale and stem 12 inches long. Scale graduated for temperature range required.	$22.50
No. 176	Straight Long Stem Thermometer .... Same as No. 175, but with 24-inch stem. No. 176 will be furnished with standard length molten metal Stem-form, in place of regular form if specified.	24.00
No. 177	Straight Long Stem Thermometer .... Same as No. 175, but with 36-inch Stem.	25.50
No. 178	Straight Long Stem Thermometer .... Same as No. 175, but with 48-inch Stem.	27.00
No. 179	Straight Long Stem Thermometer .... Same as No. 175, but with 60-inch Stem.	30.75
No. 180	Straight Long Stem Thermometer .... Same as No. 175, but with 72-inch Stem.	$36.00
No. 181	Straight Long Stem Thermometer .... Same as No. 175, but with 84-inch Stem.	42.75
No. 182	Straight Long Stem Thermometer .... Same as No. 175, but with 96-inch Stem.	51.00

Nos. 179 to 182 will be furnished with extra rigid form stem in place of regular form, if specified.

Intermediary length stems will be charged at price of next longer listed.

Extras

	ADD TO LIST
For higher range of scale, above 650° and not exceeding 750° Fahrenheit....	$4.50

For other extras, see page 68.

Handle Form—Long Stem Thermometers

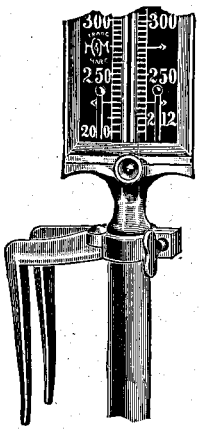
These are made only in the 7-inch and 10-inch scale lengths. The Scale-cases are suitably proportioned and made of polished aluminum castings, combining strength and lightness. Stem lengths longer than 24 inches are not desirable.

		EACH
No. 183	Handled Long Stem Thermometer .... With 7-inch scale case and stem 14 inches long. Scale graduated for temperature range required.	$18.00
No. 184	Handled Long Stem Thermometer .... Same as No. 183, but with 10-inch scale.	18.00
No. 185	Handled Long Stem Thermometer .... With 7-inch scale case and stem 24 inches long. Scale graduated for temperature range required.	22.50
No. 186	Handled Long Stem Thermometer .... Same as No. 185, but with 10-inch scale.	22.50

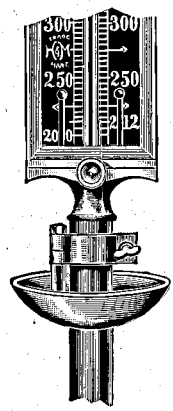
Adjustable Connections

The various Forms of Adjustable Connections illustrated herewith are convenient and practical for holding or attaching Long Stem thermometers.

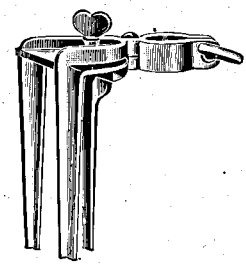
The adjustable Clamp-hook Style J, is generally used for suspending Straight thermometers from rim of kettle or tank, the double prong preventing side-tilting. The Clamp-flange J3, is used on covered vessels. Style J1 with adjustable prong, will hold thermometer firmly in vertical position when single prong is placed against inner side of vessel. The Rocking-cup clamp J2, used on covered kettles, facilitates stirring with thermometer stem. The 45° Flange-clamp may be used with either Straight or Angle; with the Straight for Inclining scale-face, to facilitate observations or attaching to slanting surface.



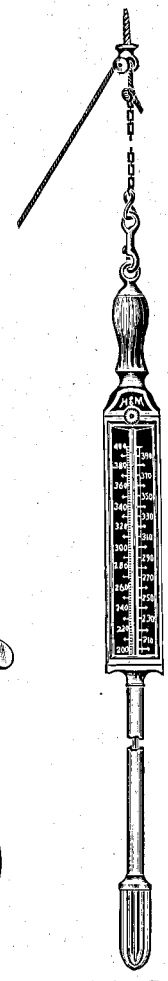
Style J
Adjustable
Clamp-hook



Style J 2
Adjustable
Rocking-cup
Clamp

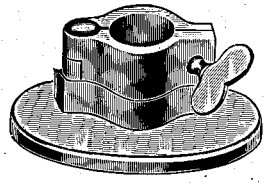


Style J 1
Adjustable
Clamp with
Adjustable Prong

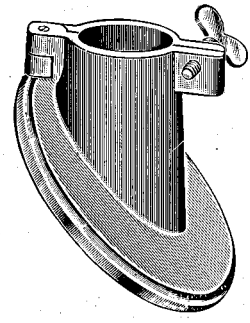


Hoisting Device with Stop Pulley for Handle Case Thermometers

Handle Scale Case used with 7-inch and 10-inch Scale



Style J 3
Adjustable
Clamp Flange



Style J 4
Adjustable Clamp
45° Angle-flange for
Extra Rigid Stem

Angle Long Stem Thermometers

Angle Long Stem thermometers are used principally on bake ovens or other spaces enclosed with brick walls. A pipe is usually walled in through which stem is inserted, and a recess or niche provided for the scale-case.

For detailed information, illustration of scale-case, table of Scale Ranges, etc., see pages 36 and 37.

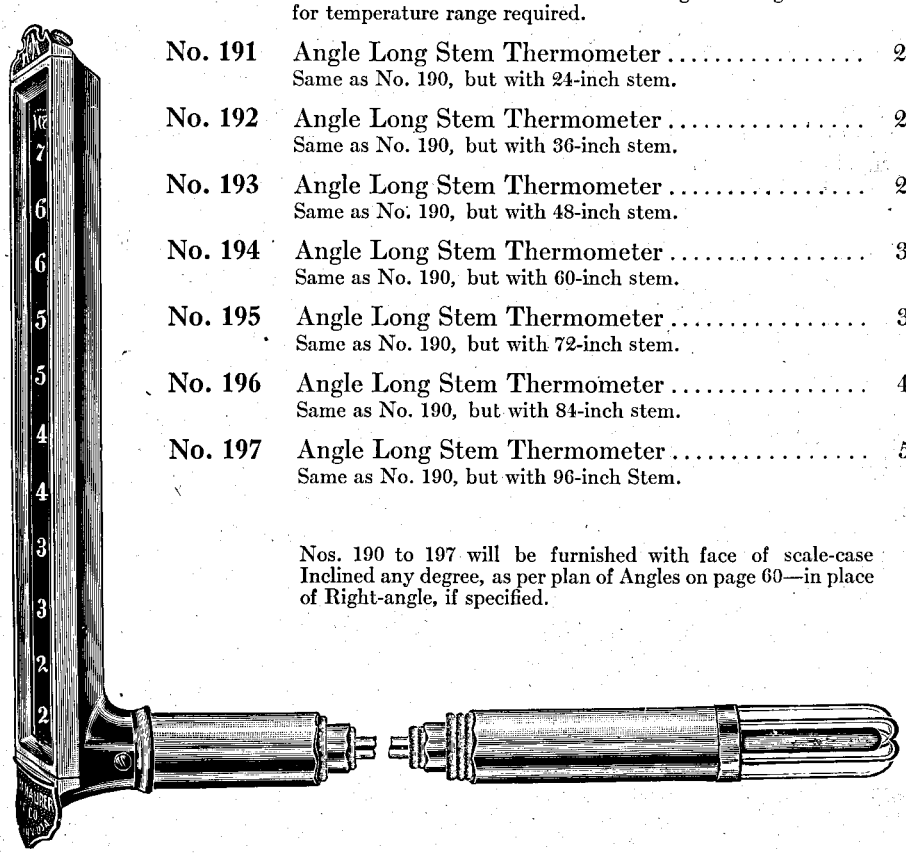
When ordering, state specific use for which thermometer is wanted.

The prices listed cover temperature ranges within the limits of 40° below zero to +750° Fahrenheit.

For ranges above 750°, see page 68.

		EACH
No. 190	Angle Long Stem Thermometer ..... With 12-inch scale and stem 12 inches long. Scale graduated for temperature range required.	$24.75
No. 191	Angle Long Stem Thermometer ..... Same as No. 190, but with 24-inch stem.	26.25
No. 192	Angle Long Stem Thermometer ..... Same as No. 190, but with 36-inch stem.	27.75
No. 193	Angle Long Stem Thermometer ..... Same as No. 190, but with 48-inch stem.	29.25
No. 194	Angle Long Stem Thermometer ..... Same as No. 190, but with 60-inch stem.	33.00
No. 195	Angle Long Stem Thermometer ..... Same as No. 190, but with 72-inch stem.	38.25
No. 196	Angle Long Stem Thermometer ..... Same as No. 190, but with 84-inch stem.	45.00
No. 197	Angle Long Stem Thermometer ..... Same as No. 190, but with 96-inch Stem.	53.25

Nos. 190 to 197 will be furnished with face of scale-case Inclined any degree, as per plan of Angles on page 60—in place of Right-angle, if specified.



Angle Long Stem Thermometer, showing internal Long Stem construction for supporting Thermometer glass tube

Modifications and Special Features Applica to Straight and Angle Thermometers

For illustrations, detailed information and measurements, etc., see page

Longer Stems

Longer stem with Thread or Union connection for each additional 6 inches or less, add to list..... $2.2
Longer stem with Separable Socket connection; for each additional 6 inches or less, add to list..... 3.75
Extension separable sockets, standard forms D6, D7, D8. add to list..... 3.75
Multiple discs on any style socket or standard Forms D16 or D30, add to list 3.75

Combination Stem

Extension between scale-case and connection, not including longer stem, add to list..... 2.25

Extension-neck Hub

Extension between wrench-head and thread over 1¾ inches and not exceeding 4 inches (Style C2), add to list..... 2.25
Extension over 4 inches and not exceeding 10 inches, add to list..... 3.75

Ventilated Hub

Hub of Union connection for attaching to jacketed apparatus (Style C4), add to list..... 9.00

Insulation

Stem insulation between scale-case and connection, add to list..... 2.25
Stem insulation between scale-case and bulb chamber, except standard length insulated form, add to list..... 2.25

Scale Graduations

Graduating Scale in Centigrade or degrees Reaumur instead of degrees Fahrenheit,. no extra charge.

Steam Pressure Scale

The Thermometric or Thermo-steam Gauge, based on Regnault's table, indicates the relative pressure of saturated steam according to temperature. By comparison with ordinary pressure gauge indications, the amount of super-heat can be ascertained as also the excess pressure due to expansion of water heated by steam if tank is entirely filled.

Graduating scale for steam pressure to 300 pounds or less (see illustration of scale, page 50), no extra charge.

Higher Range of Scale

Glass tube Mercury Thermometers are serviceable up to 1000° Fahrenheit when made of high resistance glass and with space above mercury column filled with inert gas under pressure. However, extreme care is required in manufacture and watchfulness in operation to guard against overheating which is destructive. To insure constancy of scale indications, high-range Thermometers must be subjected to an extended process of aging before calibrating.

EACH
Higher range of scale above 750° and not exceeding 900° Fahrenheit, add to list..... $11.25
Higher range of scale above 900° and not exceeding 1000° Fahrenheit, add to list..... 19.50

For temperatures above 1000° Fahrenheit we recommend Thermo-Electric Pyrometers, manufactured by our Cambridge Division.

...ific Instruments

MANUFACTURED IN LONDON, ENGLAND, BY

The Short & Mason Division

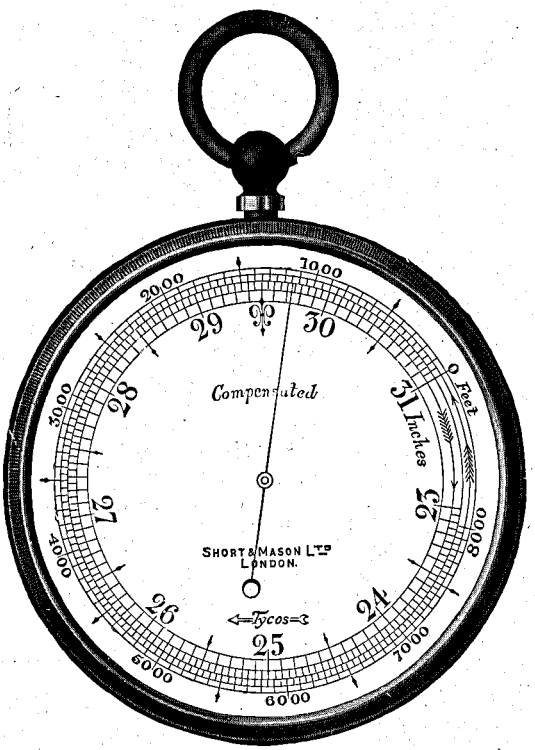
Taylor Instrument Companies

Rochester, N. Y.

2½-inch Dial Aneroids

For ascertaining variations in gradients and levels in Railways, Canals, Watercourses, Mining, Etc., and for the measurement of Hills and Mountains

As supplied to U. S. Weather Bureau, U. S. Forest Service, U. S. Geological Survey, Etc.



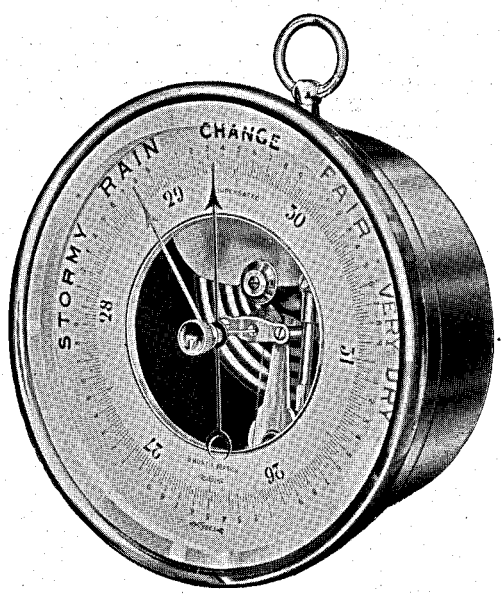
No. 2042—Actual Size

Gilt Case, Silvered Metal Dial in Morocco Case

		Price Each
No. 2042	8,000 feet altitude scale in 50 feet divisions.....	$23.25
No. 2042B	3,000 feet altitude scale in 10 feet divisions.....	25.50
No. 2042C	5,000 feet altitude scale in 20 feet divisions.....	24.00
No. 2042D	10,000 feet altitude scale in 50 feet divisions.....	24.00
No. 2042E	12,000 feet altitude scale in 50 feet divisions.....	24.75
No. 2042F	16,000 feet altitude scale in 100 feet divisions.....	27.00

Brass Case Barometers

Adopted by U. S. Navy and U. S. Weather Bureau
Compensated for Temperature



No. 2250

There has been a demand for some time past for a brass case barometer of extra quality. We feel confident in offering the above, that it is better than any barometer of similar style on the market, and that it has the advantage of being compensated for temperature.

		Diameter		
		5 in.	6 in.	8 in.
No. 2250	Extra best quality brass case Barometer, specially finished movement, compensated for temperature, silvered open metal dial divided to 0.02″.....	$17.25	$22.50	$28.50
Descriptive Letter **T**	Thermometers extra	1.80	1.80	2.25

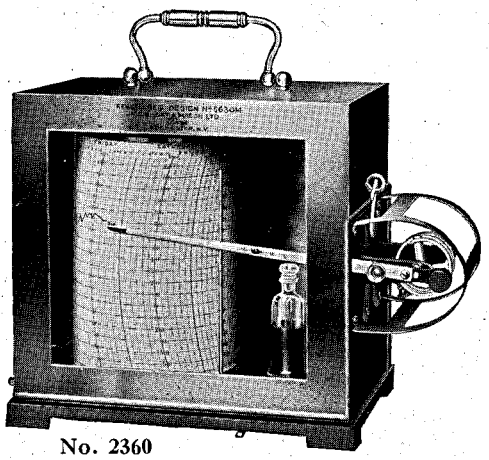
Special Cases for Brass Case Barometers

O	Highly polished mahogany cases with hinged covers, lined velvet, gilt trimmings, each	$5.25	$5.70	$6.75
N	Waxed oak cases with hinged covers, lined velvet, snap fittings.....	1.80	2.55	3.45

Recording Thermometers (Thermographs)

Adopted by the U. S. Weather Bureau and other Departments of U. S. Government

Official Pattern British Meteorological Service



No. 2360

The movement consists of a spiral lamina of two metals very sensitive to temperature changes. Having no levers in its construction other than the pen arm, it has no errors due to LAG, CREEP or FRICTION. Temperature changes are transmitted instantly and on charts reading to single degrees, changes of ¼° F. can be readily and easily noted.

Chart No. 46 gives a range of −62° to +128° F., reads in 2° lines and covers a sufficient range for most purposes.

Chart No. 37, range 0 to 100° F., Chart No. 38, range 20° to 120° F., read in 2° lines. All charts record for seven continuous days.

Instruments with charts 37, 38 and 46 are supplied with the thermometric lamina inside the case and not exposed as illustration.

With the 2360 type of instrument, charts are supplied UNFIGURED to show any 75° F. of range, any 150° F. of range or any 300° F. of range. The 75° F. charts register in 1° lines, the 150° F. in 2° lines, and the 300° F. in 4° lines.

The advantage is obvious. If in a cellar a range around 32° was desired, the chart could be figured from, say, 0 to 75°, and again, if the instrument had to be moved to a drying room where a temperature of 120° F. was desired, the chart could be figured from, say, 65° to 140° (still 75° of temperature). This creates a universal instrument. A "Kew" certified (National Physical Laboratory, Richmond, England) thermometer accompanies each instrument sent in this manner for the purpose of comparison.

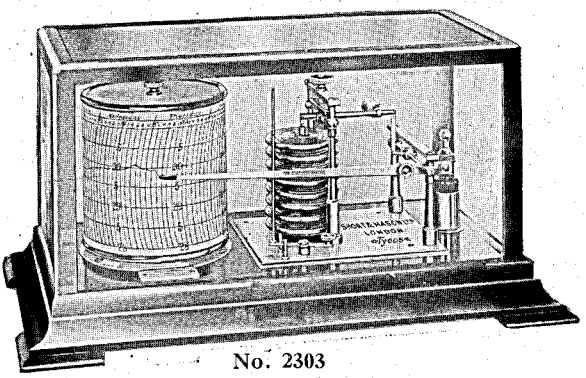
		Price Each
No. 2360-A	Thermograph with unfigured charts for any 75° range, exposed movement	$56.25
No. 2360-B	Same as No. 2360A, for any 150° range, exposed movement	56.25
No. 2360-C	Same as No. 2360A, for any 300° range, exposed movement	56.25
No. 2357	Chart No. 37, range 0 to 100° F., enclosed movement	56.25
No. 2357	Chart No. 38, range 20 to 120° F., enclosed movement	56.25
No. 2353½	Chart No. 46, range −60 to +128° F., enclosed movement	56.25

Extra Charts

	Per Set
Set of one year, Nos. 37, 38	$ 2.25
Set of one year, No 46	2.85
Set of one year, unfigured	2 85

Recording Barometers (Stormographs)

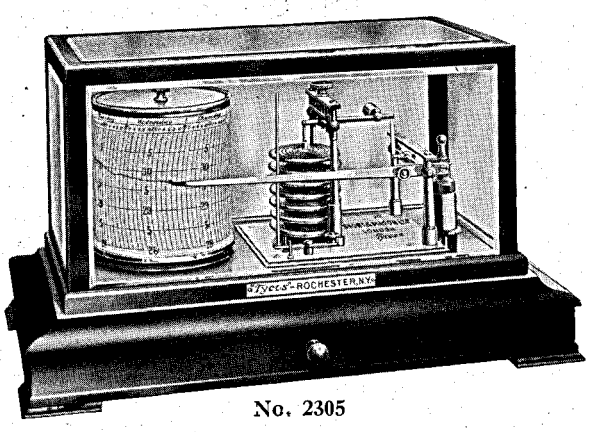
The Stormograph is a most reliable form of Barometer in indicating the present time atmospheric pressure; but its special value lies in the continuous hourly record which it creates, of every fluctuation in pressure for seven consecutive days, showing not only the extent of the various changes, but also the time of their occurrence.



No. 2303

Price Each

No. 2303 Mahogany frame, sheet glass case cover $60.00



No. 2305

Price Each

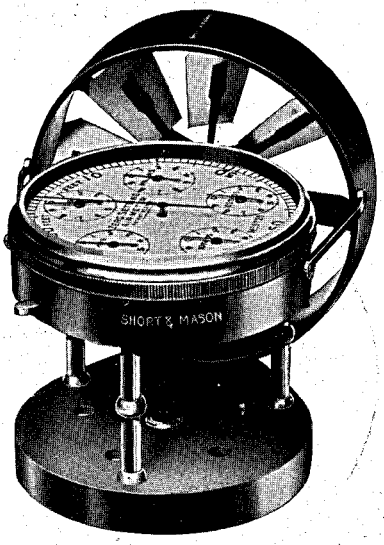
No. 2305 Same as 2303, bevelled plate glasses with front opening drawer, two divisions for taking used and unused charts... $71.25

Extras

	Price Each
Pens (ordinary)	$ .90
Pens ("V" pattern)	1.15
Sets of patented perforated charts	2.25
Ink, plain bottle	.60
Ink, stoppered bottle	.90

Airmeters

Adopted by different departments of the U. S. Government and in use by the principal Ventilating Engineers and Mines throughout the country



No. 3121. All with Jewelled Movements

For the measurement of air currents through mines, tunnels, sewers, and the ventilation of hospitals, public buildings, etc. The indications are obtained by means of a delicately poised fan wheel, the recordings being commenced by the *long* hand, which traverses the outer circumference of the main dial, showing the passage of 100 feet of air. The enumeration is continued up to 10,000,000 of feet by a series of smaller dials, but we strongly recommend the 4 dial instrument to 100,000 feet, being No. 3112. A disconnector projecting from the band of the instrument opposite the fan wheel serves to throw the mechanism out of gear and arrests its action when required.

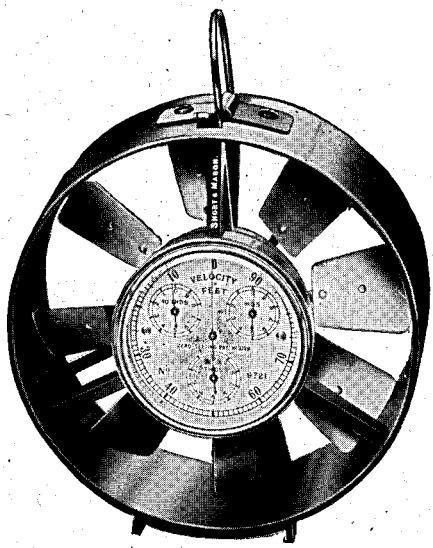
The usual way for taking a test is to place the instrument in the current in a number of different positions; take the number of feet that have passed during a certain time, for instance, say one minute; then divide the total by the number of readings and obtain the average; multiply that by the square of the opening or channel, and the result is the velocity of air, in feet, passing in a given time.

		Price Each
No. 3112	Airmeter as described, 4 dials reading to 100,000 feet, with zero setting attachment, jewelled movement, in leather case	$33.75
No. 3121	Same as No. 3112, 6 dials reading to 10,000,000 feet, with zero setting attachment, jewelled movement, in leather case	33.75

Anemometers

(Biram's Pattern)

Adopted by different departments of the U. S. Government and in use by the principal Ventilating Engineers and Mines throughout the country



No. 3132. All with Jewelled Movements

For registering the velocity of currents of air in mines, tunnels, flues of furnaces, etc., by means of a light fan, the revolutions of which are recorded on a dial in the centre of the instrument.

These Anemometers are made in different sizes, with dials of different recording quantities as shown in list, are furnished with disconnectors, and have jewelled movements.

With S & M Patent Zero Setting Attachment

(Patent No. 3729)

		Price Each
No. 3130	Biram's Anemometer, 3″, 2 dials reading to 1,000 feet....	$28.50
No. 3132*	Biram's Anemometer, 4″, 4 dials reading to 100,000 feet....	31.50
No. 3136	Biram's Anemometer, 6″, 4 dials reading to 100,000 feet....	39.75

*Specially recommended.

All above in Leather Cases

NOTE—Each instrument is tested and a chart of corrections supplied. Airmeters and Anemometers can be supplied with metric dials in place of feet at no extra charge.

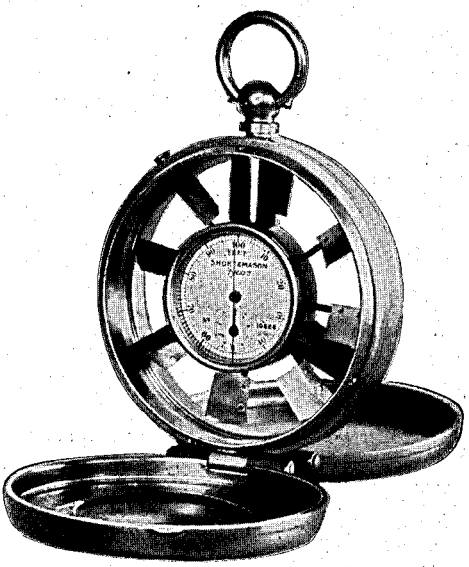
Two dial instruments will stand pressure of 1,000 feet per minute.

Four dial instruments will stand pressure of 3,000 feet per minute.

Airmeters and Anemometers cannot be guaranteed correct when used in temperatures exceeding 300° Fahrenheit.

Pocket Anemometer

(Biram's Pattern)



No. 3139

We have recently improved this type of instrument by making it more strong in its construction, and have altered the type of case. The present type has hinged lids of heavier gauge metal and the dial is absolutely enclosed, insuring perfect safety. In its present form its diameter is 2″, thickness ¾″ and weight 5½ ozs.

		Price Each
No. 3139	Biram's Anemometer, pocket size, 2 dials reading to 1,000 feet	$45.00

High Speed Anemometers

We have given great attention to the production of Anemometers capable of registering to very strong blast currents, and can now supply them to record up to 8,000 feet per minute.

		Price Each
No. 3150	High Speed Anemometer, as above, registering to 200,000 feet with disconnector and zero setting attachment, complete in leather case	$51.00

Each instrument is tested and a chart of corrections supplied.

Anemometers and Airmeters can be supplied to order with metric dials instead of feet, no extra charge.

Two dial instruments stand pressure to 1,000 feet a minute.

Four and six dial instruments stand pressure to 3,000 feet a minute.

Airmeters and Anemometers cannot be guaranteed correct when used in a temperature of over 300° Fahrenheit.

Index—Steam Generating Plant Section

	PAGE
Absolute Pressure Gauge	16
Air Duct Thermometers—Angle	18
Armored Engraved Stem Thermometers	22
Armored— Pocket Engraved Stem Thermom.	24
Automatic Temperature Regulators	26
Barometers, Mercury	14
Barometers, Aneroid	69–70
Barometers, Engine Room	15
Catchall	14
Compound Gauge, Vacuum and Pressure	14
Condenser Thermometers	
Side Angle Forms—Right—Left	7
Straight and Angle	7
Draft Gauges	17
Economizer Therm'eters—Straight and Angle	7
Engraved Stem Thermometers	21
Armored	22
Armored—Pocket	24
Precision	23
Maximum Registering	25
Factory Thermometers	19
Feed Water Thermometers—Separable Socket Connection—Straight and Angle	4
Additional Sockets	5
Greater Length Stems	5
Separable Sockets	5
Side Angle Forms—Right—Left	6
Straight and Angle—Thread Conn.	11
Flue Gas Thermometers	
Straight and Angle	12
Leather Carrying Case	12
Hygrometers	20
Index Thermometers	28
Maximum Registering Engraved Stem Thermometers	
Pocket Maximum	25
Armored Maximum	25
Mercury Column Vacuum Gauge	14
Mercury Column Compound Gauge	14
Mercury Column Absolute Pressure Gauge	16
Mercury Wells	18
Metal Plate Thermometers	19
Observatory Mercurial Barometer	14
Precision Engraved Stem Thermometers	23
Pocket Test Thermometers	24
Pyrometers	13
Recording Thermometers	27, 29, 30, 31, 33, 35
Self-contained Form	34
Recording Feedwater Thermometer	27
Regulators	26
Superheated Steam Thermometers	
Low Range—Straight and Angle	8
Intermediate Range—Straight and Angle	9
High Range—Straight and Angle	9
Multiple Disk Feature	9
Temperature Regulators	26
Thermo Steam Gauges	
High Pressure—Straight and Angle	10
Low Pressure—Straight and Angle.	10
Thread Connection Thermometers for Feedwater, etc.	11
Vacuum Gauges	14

Index—General Section

	PAGE
Adjustable Connections	66
Angle Long Stem Thermometer	67
Angle Thermometers	
Fixed Connections	52–53
Flange Connection Forms	54
Flange Union or Separable Socket Connection	55
Irregular Forms	60–61
Oblique Flange Connections	56–57
Angle Thermometer Stem Forms — Fixed Connections	46–47
Application—Oblique Flange Connections	54
Connections—Adjustable	66
Fixed Connections, Description of	
Angle Thermometers	52–53
Angle Thermometer Stem Forms	46–47
Straight Thermometers	50–51
Straight Thermometer Stem Forms	44–45
Flange Forms—Union Connections	43
Connections—Angle Thermometers.	54
Union or Separable Socket Connection—Angle Thermometers	55
Illustration—Separable Socket Connection	38
Important References	37
Insulation Feature	48
Insulated Stem Forms	49
Irregular Forms—Angle Thermometers	60–61
Long Thermometer Stem Forms	64
Modifications and Special Features	68
Oblique Flange Connections—Application	58
Connections—Straight Thermometer	59
Unions — Angle Thermometers	56–57
References—Important	37
Scale Cases	36
Scale-case Sizes—Cross section	36
Scale Ranges—Table of	37
Separable Sockets	40–41
Socket Connection—Description of	39
Illustration	38
Side angle Forms	62–63
Special Features and Modifications	68
Stem Forms—Insulated	49
Straight Long Stem Thermometers	65
Straight Thermometers—Fixed Connections	50–51
Thermometers—Oblique Flange Connections	59
Thermometer Stem Forms—Fixed Connections	44–45
Table of Scale Ranges	37
Threaded Hub Forms—Union Connections	42
Union Connections—Flange Forms	43
Threaded Hub Forms	42

Index—Short & Mason Division

	PAGE
Airmeters	73
Anemometers	74
Aneroids—Dial	69
Barometers—Brass Case	70
Dial Aneroids	69
Pocket Anemometers	75
Recording Barometers (Stormographs)	72
Thermographs	71