



STANDARD GAGES
for Rain, Snow and Water Level

THE crucial program of national scope upon which America is now engaged, deals with water and water-resources. Soil conservation, with reforestation as an interlocking project; flood control; irrigation of drought-stricken areas; hydro-electric and inland waterways development; these are not disconnected segments but interdependent elements of one central plan, the conservation and control of our water-supply.

The wealth of our top-soil is washed down to the lowlands, while the same flood waters destroy the habitations of men. In the summer that follows, vast areas are parched by drought. The problem all goes back to the efficient control of rainfall and water-supply, that good soil will not be eroded, that floods will be defeated at their source and that reservoirs shall conserve water against the drought.

The practical approach to this vast and intricate problem requires extensive data of every water-supply over a long period of years and over wide areas, as a fundamental necessity. Only then can a sound national water plan be followed. Insufficient data can lead to overbuilding just as easily as it can to underconstruction or complete neglect of important units.

The important part that water-recording instruments—whether Rainfall Recorders or Water Level Recorders—take in gathering this essential data, is the story of this booklet.

Against the interesting background of their many uses, the most complete selection of STANDARD GAGES FOR RAIN, SNOW AND WATER LEVEL is illustrated and described in detail by "The Makers of America's Weather Instruments."



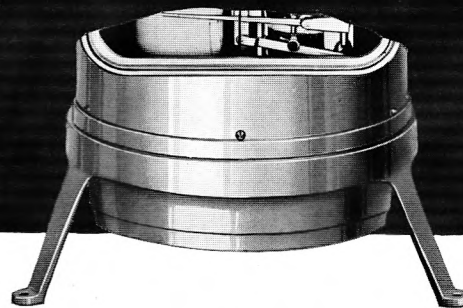
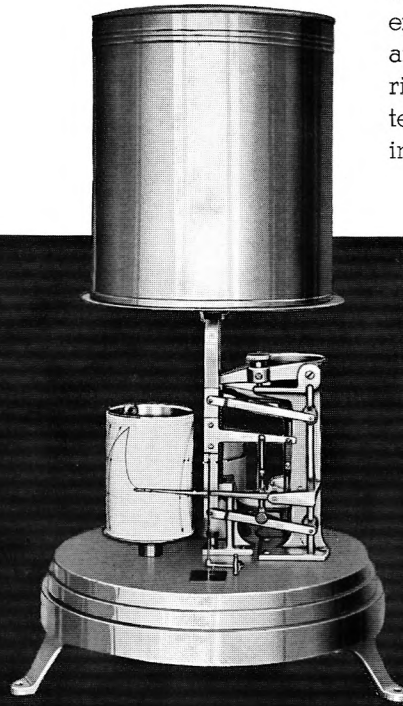
WEIGHING RECORDING RAIN AND SNOW GAGE

Fergusson Type — The Standard Precipitation Recorder for Universal Service

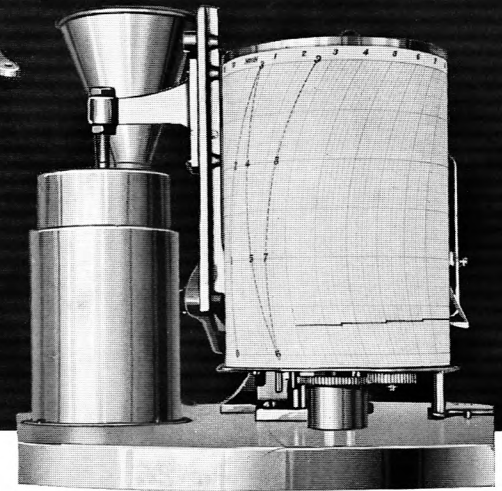
For permanent installations, where complete records of precipitation are required. Constructed for extremely long life, even when exposed to severest weather. Copper, brass and stainless steel—the most durable materials obtainable—are used. Improvements tested by years of actual service are included in these current models.



No. 760



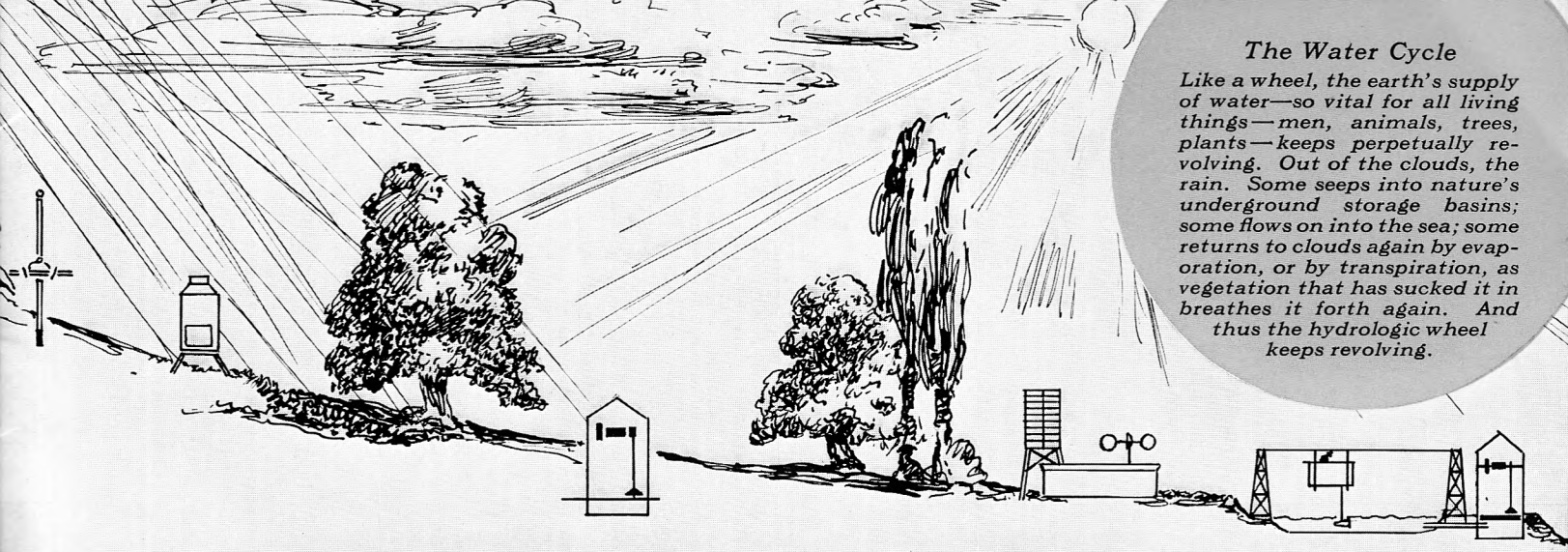
No. 762



Detail of Clock Mechanism

The record is a complete picture of duration, intensity and total amount of continuous precipitation for a maximum of either 9 or 12 inches. The 9-inch gage, however, has a bucket capacity of 12 inches so that no overflow will occur until that quantity is collected. Twelve-inch gages offer the added feature of an overflow collector basin for catchment of precipitation exceeding 12 inches. A detailed illustration of this special attachment which differentiates the 9-inch and 12-inch gages is shown beneath the base of lower gage section above.

In general design all models are alike. The roomy, accessible case is provided with a rubber-sealed, weather-proof service door which can be quickly locked against meddlers. The weighing mechanism is thoroughly damped against wind vibration. Clocks are of the best grade, with temperature compensated and jeweled anchor escapement. By simple interchange of gears (illustrated beneath the clock cylinder above) recording periods can be changed at will to any **one** of those tabulated on page 3. In all cases, clocks run for eight days with one winding.



The Water Cycle

Like a wheel, the earth's supply of water—so vital for all living things—men, animals, trees, plants—keeps perpetually revolving. Out of the clouds, the rain. Some seeps into nature's underground storage basins; some flows on into the sea; some returns to clouds again by evaporation, or by transpiration, as vegetation that has sucked it in breathes it forth again. And thus the hydrologic wheel keeps revolving.

When in balance, as nature provides, each separate function complements another—vegetation flourishes, men and animals share its abundance. By heedless interference, man can throw the cycle out of balance, and disorder

and suffering result. Any national government, as the trustee of a nation's natural resources, must guard that the replenishing, restorative cycle be providently preserved.

The Fergusson Weighing Recording Rain and Snow Gage

Records rain, dry or unmelted snow, hail and sleet with equal facility and in the same manner. Expensive and troublesome devices for melting snow or sleet are entirely unnecessary and consequently it requires a minimum of attention and care. Loss of record through evaporation is avoided entirely since the record is made at the actual moment of precipitation.

The principle of operation is that of the Universal Scale, a well-designed spring balance in general use. The weight of rain or snow falling through the standard 8-inch collector into the receiver bucket resting on a platform above a specially heat-treated and seasoned spring, depresses the entire mechanism. This movement is transmitted by means of suitable levers

and links to a recording pen.

The pen reverses its direction for each third of the recording capacity, thereby magnifying the recording scale to triple the normal chart width. The rainfall record can be read to one-quarter of .02 inch rain (the smallest chart division). Approximately this amount of precipitation is required to displace the sensitive balance and move the pen. Note the three distinct steps shown on the detailed illustration of the recording cylinder. Each represents but .02 inch of rainfall.

As our most popular rain and snow gage, this instrument is offered in a wide variety of models. (See table below.)

Models and Specifications

For prices, please refer to current price list

Catalog Number	Recording Capacity	Recording Period	Charts				
			Catalog Number	Number Per Set	Scales (English)		
					1 In. Rain Equals	Smallest Division on Chart Equals	
760	9 in.	195 hr.	1015-F	55	1 1/2 in. chart	2 hr.	
761	9 in.	24 hr.	1015-G	375	1 1/2 in. chart	10 min.	
766	9 in.	12 hr.	1015-SS	375	1 1/2 in. chart	5 min.	
766-6H	9 in.	6 hr.	1015-V	375	1 1/2 in. chart	2 min.	
762	12 in.	195 hr.	1015-I	55	1 1/8 in. chart	2 hr.	
763	12 in.	24 hr.	1015-L	375	1 1/8 in. chart	10 min.	
767	12 in.	12 hr.	1015-T	375	1 1/8 in. chart	5 min.	
						Scales (Metric)	
768	300 mm.	195 hr.	1015-U	55	25 mm. rain equals	2 hr.	
769	300 mm.	24 hr.	1015-Q	375	28.15 mm. chart	10 min.	
						28.15 mm. chart	

Shipping Weight: Gross, Approx. 150 lbs.; Net, 70 lbs.

Note: Charts listed are for use with standard chart clip. Perforated charts which may be taped on cylinder by hidden tape, and which expose the full recording cylinder, are available on special order.

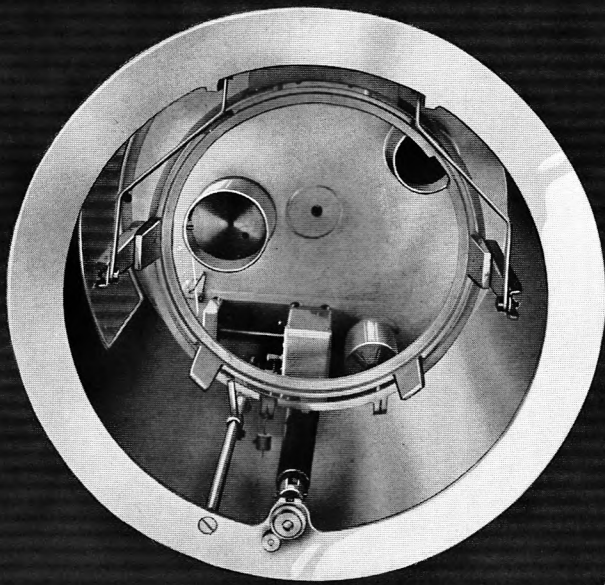
WEIGHING RECORDING RAIN AND SNOW GAGE

THIRTY-INCH CAPACITY

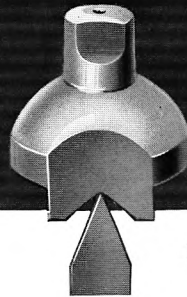
For recording intense falls of rain, snow, hail or sleet

This gage, designed primarily for use in regions where periodic rains of exceptional intensity occur, can also be used to record normal light precipitation.

No. 779



Vertical View with Collector Removed



Detail of Knife Edge Suspension

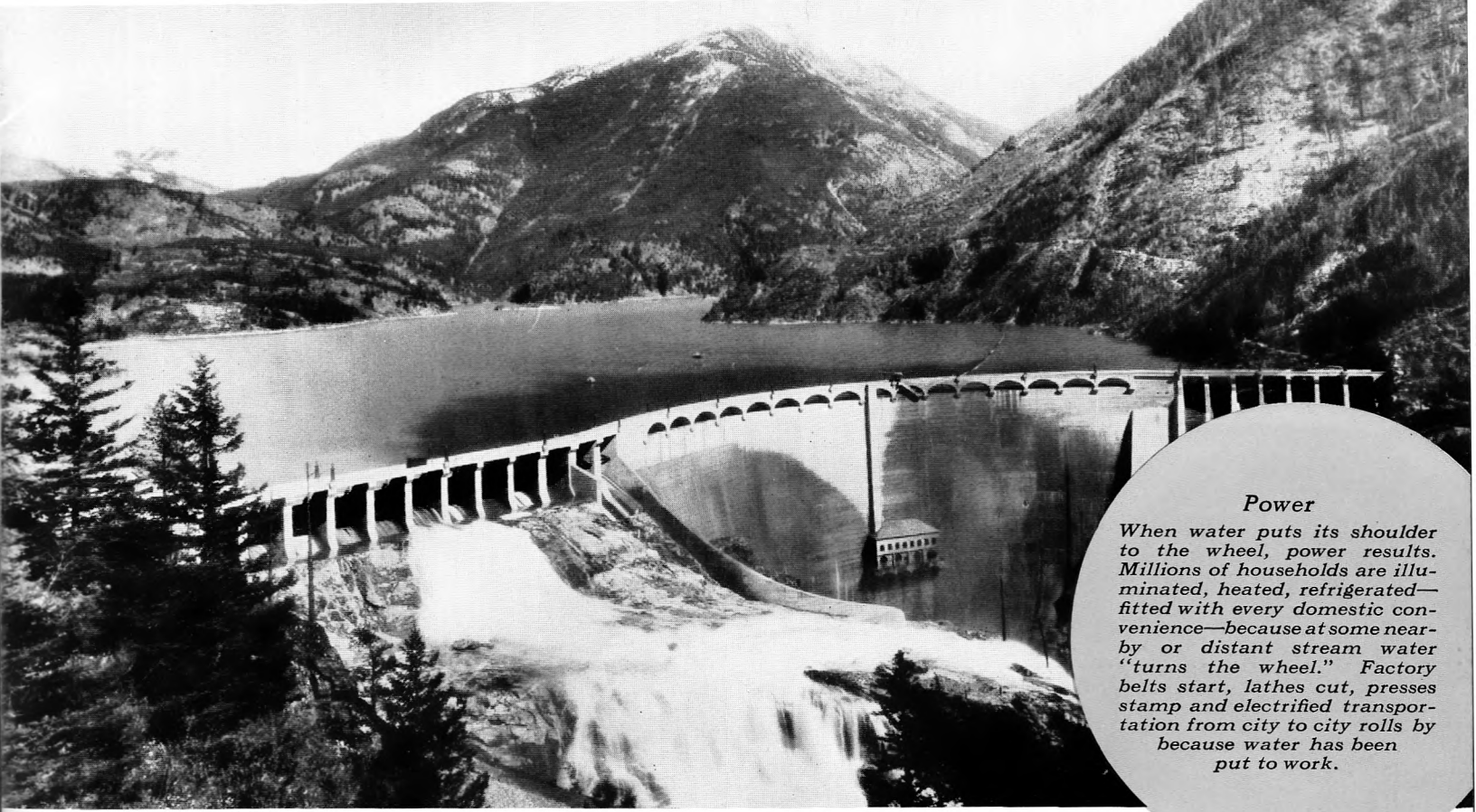


The record is an accurate graph of intensity, duration and total catch; with rainfall increments recorded as ordinates against time as abscissae. A special mechanism causes the pen to reverse its movement after each chart traverse, which represents but 4 in. of rain. For this reason a capacity record requires $7\frac{1}{2}$ full traverses of the chart at a scale of $1\frac{1}{8}$ in. of chart to 1 in. of rain. This method furnishes a very open scale which can be read easily for rate, duration and total fall of even the heaviest cloudbursts.

The chart drum is revolved by a weekly clock

movement. The clock is of the best grade, with jeweled and temperature compensated anchor escapement. It will run eight full days with one winding, approximating a weekly recording period, with an extra time overrun for convenience of the operator.

This gage represents our best efforts at modern product design. After engineering features are assured and durable finishes selected, no effort is ever spared to make all Friez instruments a source of pride to their users.



Power

When water puts its shoulder to the wheel, power results. Millions of households are illuminated, heated, refrigerated—fitted with every domestic convenience—because at some nearby or distant stream water “turns the wheel.” Factory belts start, lathes cut, presses stamp and electrified transportation from city to city rolls by because water has been put to work.

Unused through eons, water power surged on recklessly to the ocean—hidden, unexplored, unharnessed. Is there need to emphasize the truism that man’s knowledge of water—achieved mainly by recording instruments

tabulating a long life story of some stream or river—has given him power to control water to its best advantage, and make it put its full shoulder to the wheel.

The Thirty-Inch Weighing Recording Rain and Snow Gage

Rain, snow, hail or sleet falls directly through the collector ring into the weighing bucket mounted on the weighing platform. The weight of these elements is immediately translated to equivalent inches of rainfall and recorded directly on the chart drum, without the necessity of expensive or troublesome devices for melting sleet or snow.

In construction, this gage follows the precedent established by all Friez Instruments, by incorporating the best of materials, workmanship and finish. The case is water-tight, with a weather-proof and splash-proof rubber-sealed door. The case is 18 inches in diameter surmounted by a seamless brass collector

carefully cut to a close tolerance on its rain-splitting edge. The weighing mechanism is a sensitive heat-treated spring balance with its platform mounted on hardened knife edges at pivot points. A detail of this extremely sensitive method of obtaining precise balance and elimination of frictional bearing is illustrated on page 4.

The collector is provided with a funnel which can be easily removed for precipitation other than rain. The lower edge of the collector extends sufficiently deep into the bucket to prevent any loss of snow by eddying into the gage housing itself.

Models and Specifications

For prices, please refer to current price list

No. 779: Weighing Recording Rain and Snow Gage, for continuous weekly records of precipitation up to 30 inches. Instrument complete with weighing and recording mechanism enclosed in weather-proof case and with accessories, including pen, ink and year’s supply (55) of charts No. 1015-O.

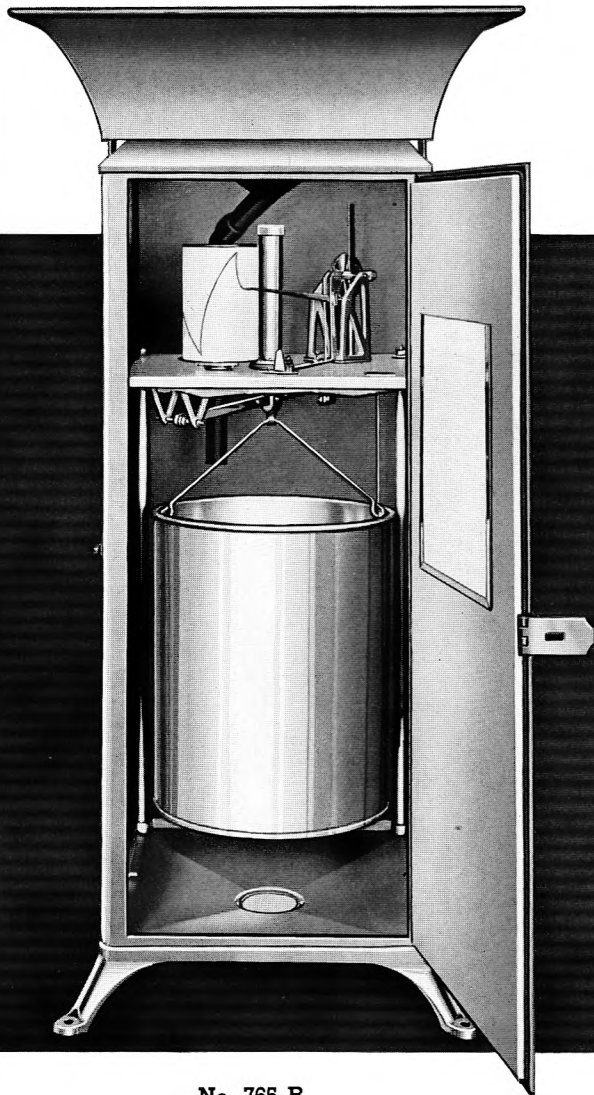
Gross Shipping Weight, 195 lbs.; Net, 90 lbs.

WEIGHING RECORDING RAIN GAGE

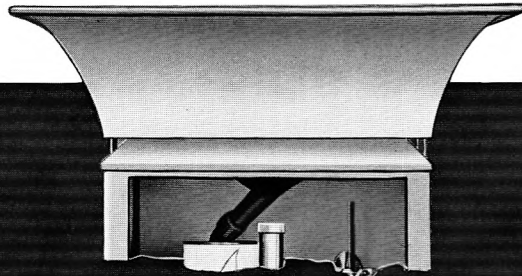
THIRTY-INCH CAPACITY

For rainfall records only where snowfall,
if any, is very light

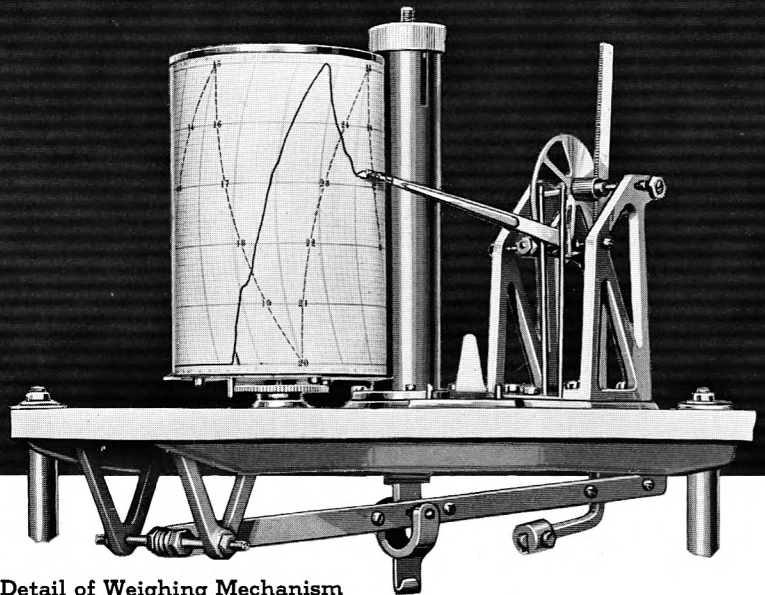
For regions subject to intense rainfall, or for isolated rain gage exposures where several heavy rains may occur before the operator has an opportunity to remove the record.



No. 765-B



Nipher Shield



Detail of Weighing Mechanism

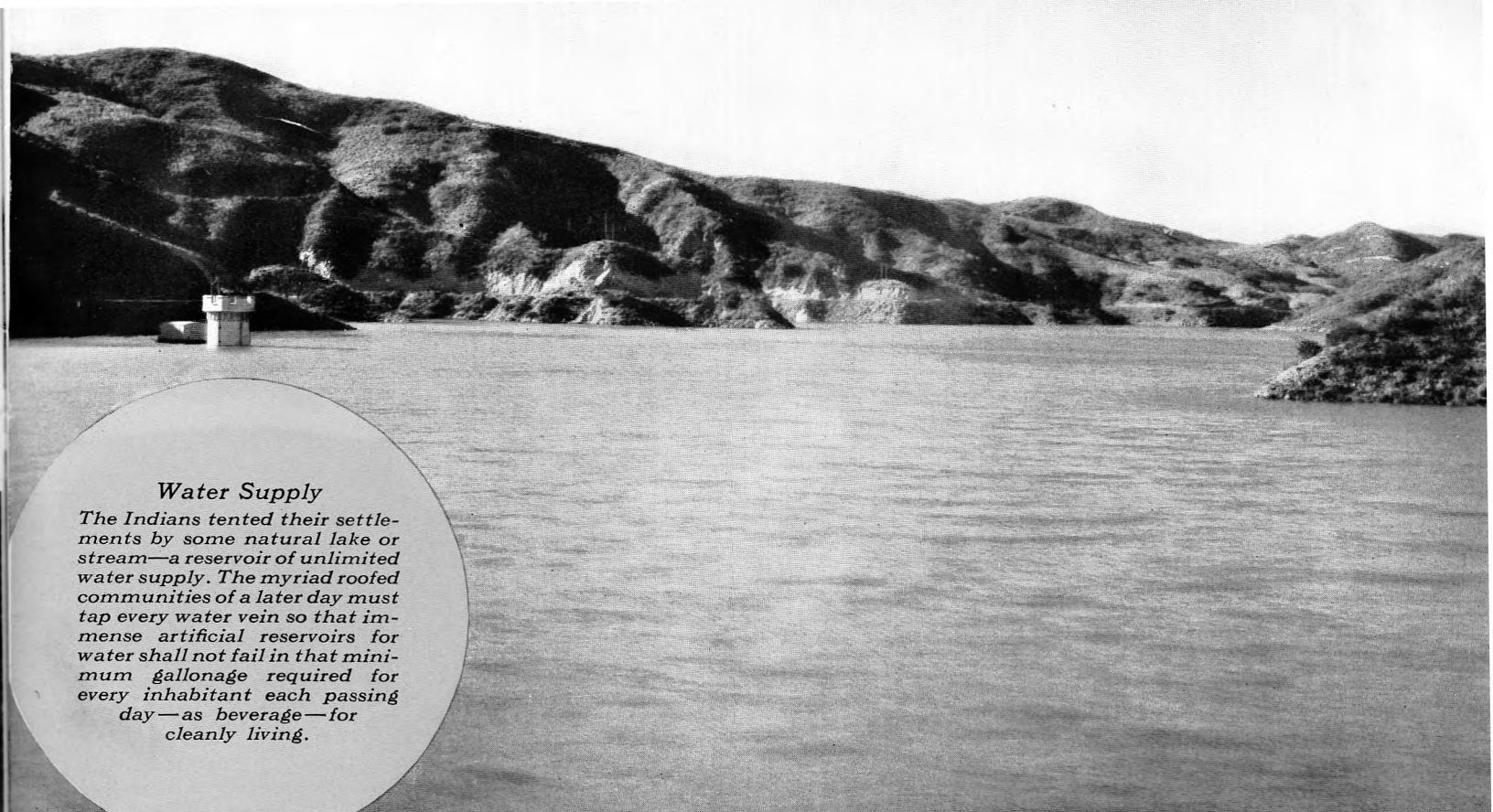
In this gage the recording mechanism is mounted on the stationary platform above the bucket.

An open recording scale is furnished by five pen traverses, which record the full 30-inch capacity of the gage. This wide range and open scale produces records of the heaviest rains; showing intensity, duration and total catch.

Clocks are of the best grade with jeweled and temperature compensated anchor escapements. In

the standard weekly gage, the clock makes one revolution in eight days and it need be wound but once in that period for continuous operation.

Because the gage records rain only, it allows a weighing mechanism which suspends all weight below the simple lever system scale, thus reducing frictional load at bearing points to a minimum and securing fine sensitivity.



Water Supply

The Indians tented their settlements by some natural lake or stream—a reservoir of unlimited water supply. The myriad roofed communities of a later day must tap every water vein so that immense artificial reservoirs for water shall not fail in that minimum gallonage required for every inhabitant each passing day—as beverage—for cleanly living.

That this tide shall not ebb away is quite as important as that the money tills of municipal treasuries remain undepleted. Guesswork or rough calculations will not suffice.

Accurate data—compiled by precision water level recorders—are as important for the budget of our water supply as are adding machines for our financial budget.

Weighing and Recording Rain Gage

In this weighing and recording rain gage, falling rain enters the circular collector at the top of the gage, and is piped directly to the bucket suspended below. The weighing mechanism, actuating the pen arm through a heart cam device, translates the weight of the catch directly into inches of rain and reverses the pen five times to record full capacity. Pen reversals provide an extremely open scale whereby 1 inch of chart equals 1 inch of rain. This gage is sensitive to .01 inch of rainfall and accurate to within one-half of one per cent.

In addition to the suspended weight lever system, many mechanical refinements dictated by years of experience are built into this gage. The case, not excessively large, still allows ample room to handle all working parts in routine service. The entire

mechanism is damped by an adjustable dash-pot, assuring a record unaffected by wind vibrations. The ruggedly constructed bucket may be partially drained of excessive weight by a special siphon furnished as an accessory with each gage. Light snowfalls (approximately 6½ inches) will be trapped in the collector. These can subsequently be melted and added to the record of total catch.

To reduce the effect of adverse wind conditions on the large square case, provision is made for installation of a nipher shield. This device, offered as an accessory, is designed to convert cross currents and updrafts to reverse eddy flows, causing a turbulence in the region surrounding the gage and creating a relatively calm region above the collector.

Models and Specifications

For prices, please refer to current price list

No. 765-B: Weighing Recording Rain Gage, for continuous weekly records of rainfall up to 30 inches. Instrument complete with weighing recording mechanism enclosed in weather-proof case provided with nipher shield and with accessories, including pen, ink and year's supply (55) of charts No. 1016-B.

No. 765-A: Weighing Recording Rain Gage, same as No. 765-D, except without nipher shield.

Gross Shipping Weight, 165 lbs.; Net, 80 lbs.

INDICATING RAIN AND SNOW GAGES

STANDARD U.S. WEATHER BUREAU PATTERN

The simplest and most widely used non-recording rain gages

Records made by these gages are comparable with official rainfall data. Their extensive application includes individual weather observers as well as elaborate climatological stations, where they are not only mediums for comparison but often sources of basic data.



In the No. 400 Gage, rain enters the 8-inch collector and is funnelled into the central measuring tube (2.53 inches diameter), thus giving a 10:1 ratio between their respective areas. Rainfalls exceeding 2 inches overflow into the outer tank. This overflow, when added to the 2-inch reading, gives the total catch.

The measuring stick, an unvarnished strip of straight-grained cedar, reads rainfall directly without recourse to further calculation. Although 24 inches in length, it is actually graduated for but 2.4 inches of rainfall, thereby providing a 10:1 magnification for extremely accurate measurements.

The complete gage is mounted on a tripod support

which is easily secured by screws through the feet. The 2-inch gage is offered in two models, finished and unfinished, with different supports, as listed on page 9.

When measuring snowfall with either the No. 400 or No. 398 Gages, the overflow cylinder alone is used for collection. The snow may be reduced to water in a warm room, or better, melt it with a full measuring tube of warm water, subtract a full measuring tube from the combination and determine equivalent rainfall by measuring the remainder in the usual manner.



Irrigation

Until the mythical rainmakers arrive, cultivated vegetation will always be a gamble in which the hazard can be protected only by some form of rain insurance. The farmer may have his lands plowed, harrowed, fertilized, and yet must await a moistening rain to nurture his young plantings. Or he may have spent his last reserves hoping to stake himself anew when his growing crop matures at harvest, only to watch parched dust clouds cover his fields.

Not only against the withering drought, but none the less against the seasonal uncertainties, does he look to irrigation; developed either by his own engineering, by community coop-

eration, or by regional planning. Back to water records—to prospect the supply—he must resort, if proper storage is to be intelligently provided.

The No. 398 Rain Gage is the simplest of all rain gages of our manufacture. Measurements of rainfall are made with a glass graduate and no measuring stick is required. With ordinary care this instrument will serve continuously for many years.

The graduate holds 70 drams and each line equals .01 in. rainfall. Its lower end is tapered so that small rainfalls may be easily read. As illustrated, a removable disc can be used to install the graduate itself in-

stead of the jug. This practice is recommended for very light rainfalls only.

No support for the No. 398 Rain Gage is supplied. A very simple device consisting of 6-in. terra-cotta pipe, above which the gage protrudes slightly when inserted into the ground with gravel or sand for drainage, can be used to support the gage against wind.

Models and Specifications

For prices, please refer to current price list

Catalog Number	Description	Gross Shipping Weight	Net Weight
400	Indicating Rain and Snow Gage, complete with measuring tube of lacquered brass, case finished in weather-proof satin aluminum and with black enameled iron tripod support	32 lbs.	14 lbs.
400-A	Same as No. 400, but without wrought-iron tripod support.....	12 lbs.	8 lbs.
400-B	Indicating Rain and Snow Gage, complete, but with unpainted case, and with spot-welded and unpainted sheet steel tripod support.....	30 lbs.	12 lbs.
400-C	Same as No. 400-B, but without sheet steel tripod support.....	12 lbs.	6 lbs.
398	Indicating Rain and Snow Gage, complete with glass jug receiver and 70-dram glass graduate	15 lbs.	6 lbs.
398-A	Glass Graduate only, for No. 398 Rain and Snow Gage.....	5 lbs.	1½ lbs.

ELECTRICAL TRANSMITTING RAIN GAGE WITH DISTANT RECORDER

For remote indoor records or

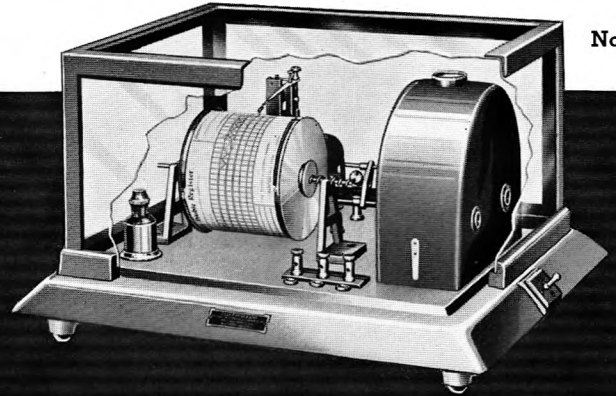
DIAL REGISTERING RAIN GAGE

For direct registration of rainfall

No. 405



No. 406



No. 401



Transmitter No. 405 has a collector ring with funnel, an overflow reservoir and a tipping bucket mechanism, as illustrated. The tipping bucket, provided with corrosion-resistant, platinum contacts, is divided in two equal compartments. When either compartment collects .01 in. rain, the bucket tips, momentarily closing a contact as it empties one compartment. The other compartment is presented instantly to incoming rain, thus completing the cycle.

A standard measuring tube and stick are furnished for check comparisons. In this case, the catch is drained and measured as described on page 8.

Recorder No. 406 consists of a jeweled eight-day

clock movement, recording pen, chart cylinder and electro-magnet, all enclosed within a full-glass panelled case and mounted upon a cast aluminum base. The clock, encased in a dustproof metal cover, rotates the record cylinder through a sliding universal joint and steep-pitch nickel-plated feed screw.

The record is a zigzag triangle of ten steps, each representing .01 in. of rain when recording English units and 0.4 of a millimeter when recording in metric units. In records at very rapid rates, each individual step cannot always be discerned, but groups of steps are always perfectly conspicuous and legible.



Soil Conservation

Soil conservation in its broadest sense extends to types of planting, to protection against over-culture. More particularly it can be restricted to protection of the soil against water that washes away the fruitful earth, and plows huge gullies, moving backward as they entrench deeper. Who can do more than guess the wealth that has been silted into river beds or carried farther to the sea. Only because, as rugged individualists, we regarded the soil as our very own.

If as a nation, we must think of posterity, no more important heritage than the soil clamors for conservation. That such a nation-wide giant project may be successful, rainfall and

runoff, accurately computed by recording instruments—stationed, too, up among the “little waters”—will present the only sufficient data for long-range soil conservation.

Indicating Rain Gage No. 401 has a standard 8-inch brass funnel collector which drains into a tipping-bucket. Each tip throws the long hand one space forward. The long hand registers hundredths of inches and the short hand inches of rainfall.

The dial shows rainfall since the last setting, or if rain is falling, the depth up to the time of reading.

Accumulated rainfall for any period may be determined by allowing continuous registration.

The brass receiving tube and copper body are attractively finished in satin aluminum. The dial is of white enamel with black figures and graduations and will not tarnish even under extreme conditions.

Models and Specifications

For prices, please refer to current price list

Catalog Number	Description	Transmitting or Recording Units	Accessory Equipment	Charts			Gross Shipping Weight	Net Weight
				Catalog Number	Number Per Set	Recording Period		
406	Rainfall Recorder	.01 in. rain	No. 405 Transmitting Gage	1015-A	375	24 hrs.	90 lbs.	20 lbs.
416	Rainfall Recorder	.01 in. rain	No. 405 Transmitting Gage	1015-J	190	2 days	90 lbs.	22 lbs.
417	Rainfall Recorder	2/5 mm. rain	No. 415 Transmitting Gage	1015-A	375	24 hrs.	90 lbs.	20 lbs.
418	Rainfall Recorder	2/5 mm. rain	No. 415 Transmitting Gage	1015-J	190	2 days	90 lbs.	22 lbs.
405	Transmitting Rain Gage	.01 in. rain	No. 406 or 416 Recorders	.....	.....	.....	80 lbs.	25 lbs.
415	Transmitting Rain Gage	2/5 mm. rain	No. 417 or 418 Recorders	.....	.....	.....	80 lbs.	25 lbs.
401	Indicating Rain Gage	.01 in. rain	.....	.....	.....	.....	20 lbs.	8 lbs.

Electrical Requirements: Transmitting Rain Gages and Recorders require low voltage direct current. Schoenmehl primary cells are recommended where interruption of the record due to current failure would be serious. Recorders can be wired for use with rectifying transformers (110 volt, 60 cycle to 6 volt D.C.) if specified. Storage batteries are not recommended because of recharging requirements. Dry cells likewise, although satisfactory for operation, have short life.

EVAPORATION HOOK GAGE AND STILL WELL

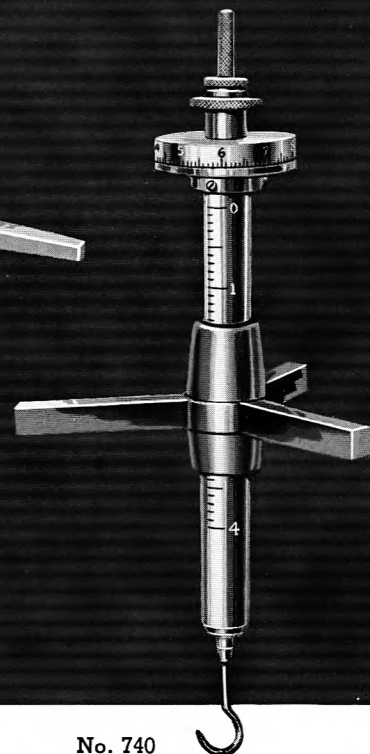
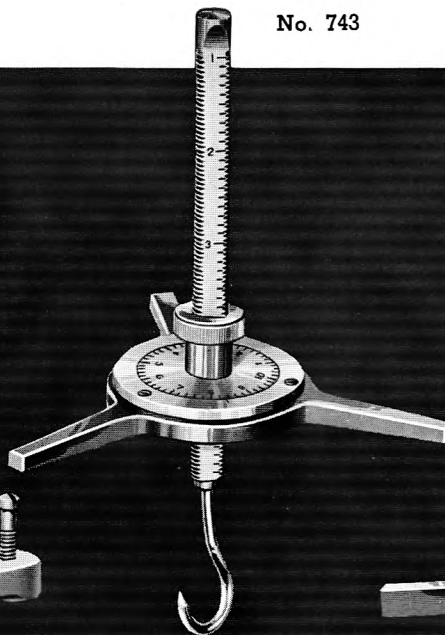
For precise measurement of evaporation
from water surfaces

For the comparative study of the various climato-
logical conditions contributing to evaporation as pur-
sued by numerous Class "A" Evaporation Stations.

No. 745



No. 743



No. 740

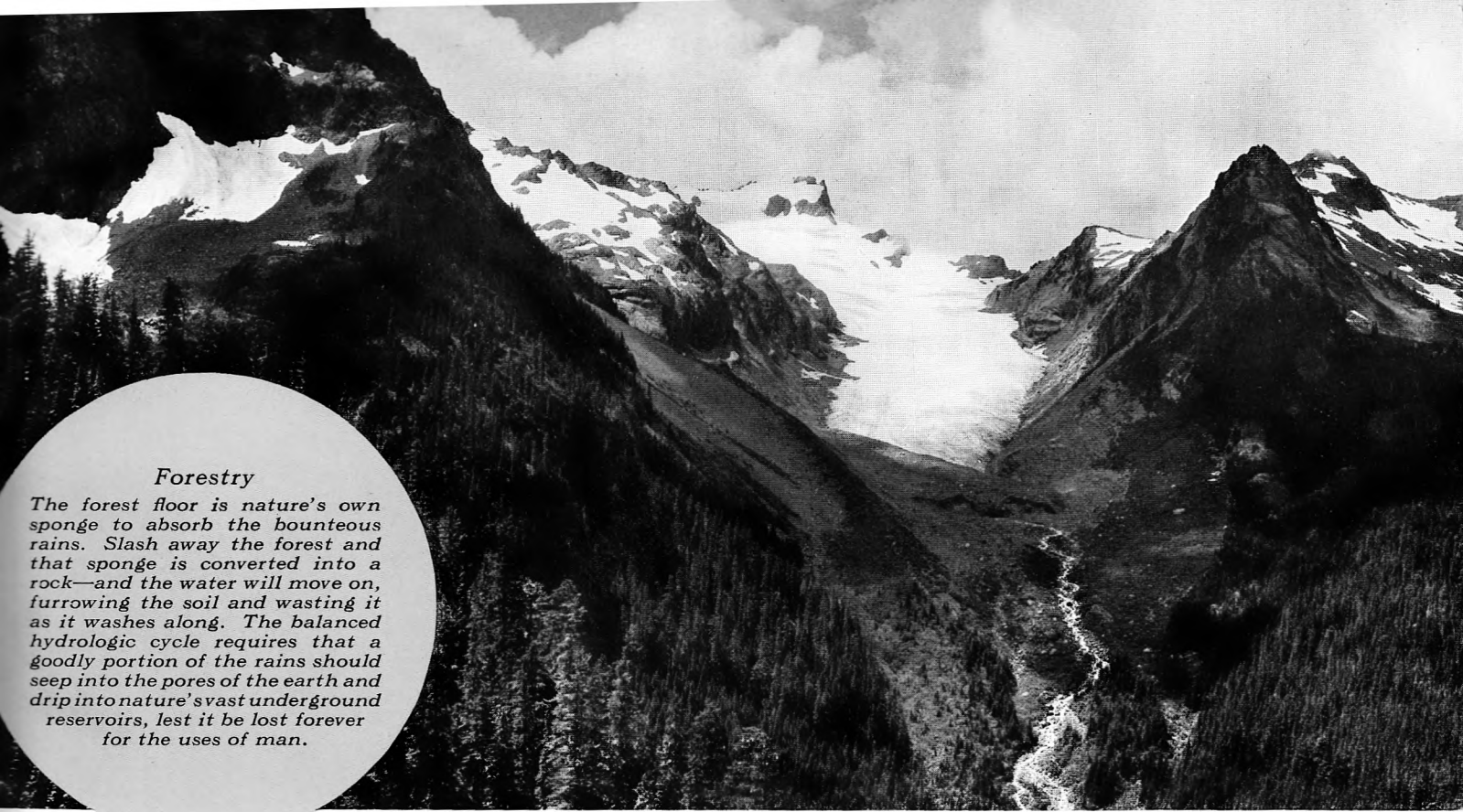
Hook Gage No. 740, which measures the difference in the level of the water's surface before and after evaporation, is constructed so that each complete revolution of a micrometer screw head moves the hook in a vertical direction exactly .1 inch. The inches and tenths of inches are graduated on the column of the gage and the hundredths and thousandths on the micrometer screw head.

When a measurement is to be taken, the Hook Gage is first placed upon the top of the Still Well with the three projecting arms resting on the rim of the brass cylinder and the hook suspended near the center of the well. The graduated screw head is

then turned until the point of the hook disappears beneath the water, then by reversing the screw movement it is caused to move slowly upward until it just pierces the water surface. A reading is then made of the graduations on the gage. The difference of level in the water observed from a subsequent reading will be an index of the evaporation that has taken place during that interval, usually 24 hours.

For description of evaporation pan see page 13.

Metric measurements giving readings on the column of the gage in centimeters and millimeters, and on the micrometer screw head in millimeters and hundredths of millimeters, are offered in Model 741.



Forestry

The forest floor is nature's own sponge to absorb the bounteous rains. Slash away the forest and that sponge is converted into a rock—and the water will move on, furrowing the soil and wasting it as it washes along. The balanced hydrologic cycle requires that a goodly portion of the rains should seep into the pores of the earth and drip into nature's vast underground reservoirs, lest it be lost forever for the uses of man.

Forest conservation and forest renewal are important banners to fly. They entail a secondary benefit—the conservation of water—before which all other natural resources seem but

trifles, and in that nation-wide administration of the forest cover, the simplest rain gage does its humble part to count the raindrops our forests must help conserve.

Hook Gage No. 743 is so constructed that each complete revolution of the micrometer screw head moves the hook in a vertical direction exactly .1 of an inch. The inches and tenths of inches are graduated on the column of the gage, hundredths on the periphery of the micrometer with thousandths estimated by interpolation on this same index, actually graduated in .002 inch divisions. The instrument is constructed entirely of non-ferrous metals.

The same instrument is available graduated in millimeters and is listed as Model 744.

The water which is being observed is contained in a 4-foot evaporation pan, firmly constructed so that

there will be no buckling of its bottom, a condition which would seriously interfere with the level of the surface of the water in the Still-Well and make any observations of evaporation worthless.

In this pan is placed a Still-Well to provide an un-ruffled water surface. It is made of seamless brass tubing, measuring 8 inches in height and 3½ inches on its outside diameter. The Still-Well is mounted upon a triangular cast-iron base, with leveling screws at each corner. Water is admitted into the Still-Well from the evaporation pan by means of a small brass pipe extending through the cast-iron base.

Models and Specifications

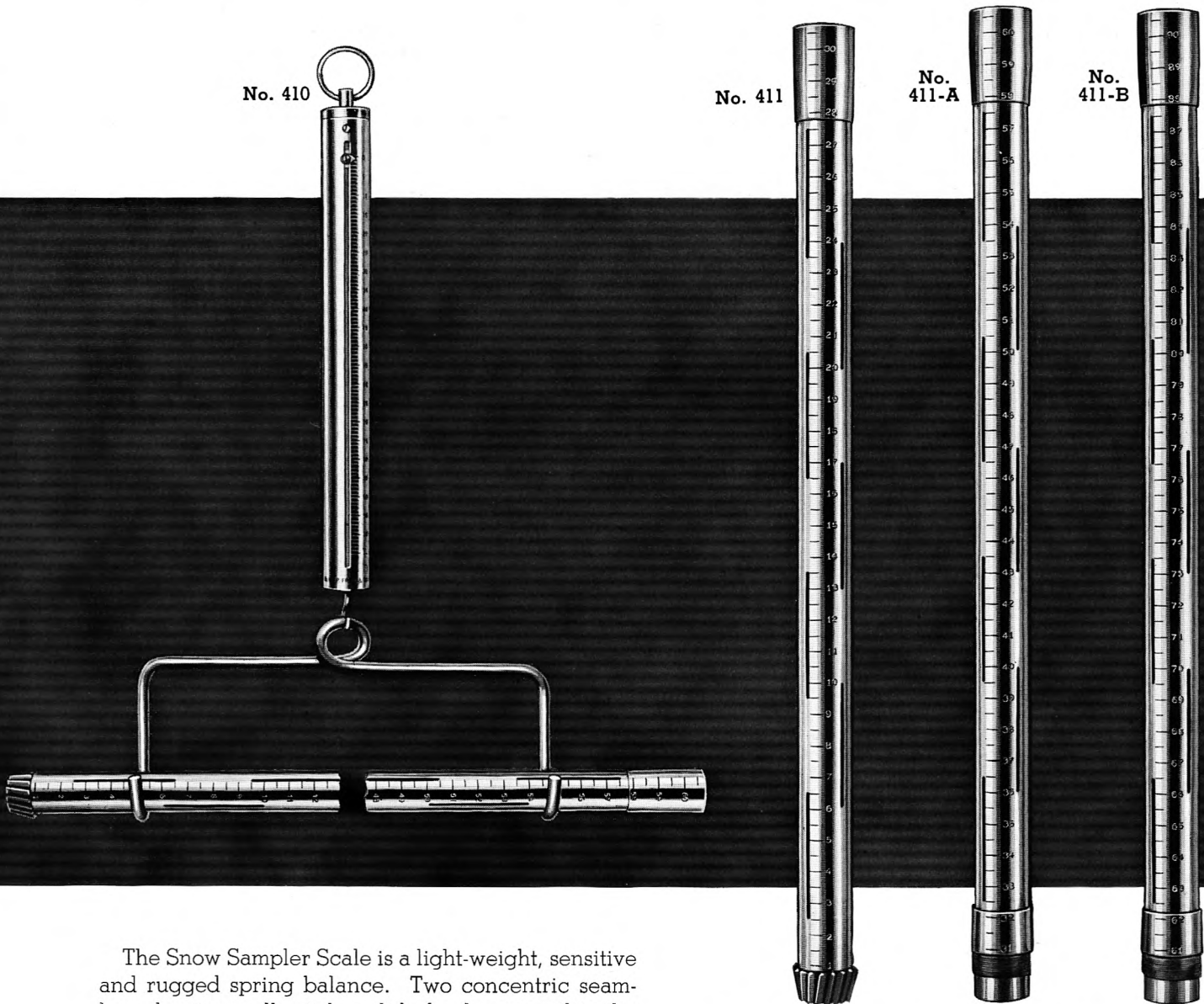
For prices, please refer to current price list

Catalog Number	Description	Range	Smallest Vernier Reading	Gross Shipping Weight	Net Weight
740	Evaporation Hook Gage.....	4 in.	0.001 in.	10 lbs.	3 lbs.
741	Evaporation Hook Gage.....	9 cm.	0.01 mm.	10 lbs.	3 lbs.
743	Evaporation Hook Gage.....	4 in.	0.002 in.	7 lbs.	2 lbs.
744	Evaporation Hook Gage.....	10 cm.	0.02 mm.	7 lbs.	2 lbs.
745	Still Well (For use with all above Gages).....	.....	.....	30 lbs.	13 lbs.

SNOW SAMPLER

Direct Reading Type

Employing unique direct reading features and light sturdy construction, this instrument represents the latest advance in snow-surveying equipment.



The Snow Sampler Scale is a light-weight, sensitive and rugged spring balance. Two concentric seamless aluminum alloy tubes slide freely one within the other to form a housing for the tempered steel spring within.

Two types of scales are offered. The capacity of the first type is a 12½-foot snow sampler tube, plus snow core, and it is given an initial spring tension equal to slightly less than an empty 5-foot tube complete with cutter.

The capacity of the second type is a 20-foot sampler tube, plus core. It has an initial spring tension slightly less than an empty 12½-foot tube complete with cutter. In any case, the weight of a sample core is the difference between tube plus core and empty.

The scale is graduated in ounces, each ounce representing the weight of a core of pure water 1 inch long and equivalent in diameter to the snow core (1.485 inches). This establishes the relation between density of the snow core and water.

Depth of snow in inches is read by inspection through the graduated slots provided for that purpose in the tubing. By definition, therefore, snow density is immediately determined by the ratio of two known factors:

$$\text{Density} = \frac{\text{Weight of snow core in ounces}}{\text{Length of snow core in inches}}$$



Snow Surveys

In any estimate of the spring season's water resources to be derived from precipitation, the need is obvious to evaluate the "snows of yesteryear." High banks of snow on far mountain slopes await the spring to start them dripping into rivulets—then gathering into mountain streams flowing down to fill the rivers—replenishing reservoirs or adding to the destructive floods that follow spring thaws.

Only a survey, a measurement of the snow-coverage of any watershed, can supply the data which enables the engineer to convert the melting snows to the best advantage. High up in Nevada's mountains, every winter now for many years, snow-surveying crews have plunged in their

snow samplers to learn its depth, and have weighed it for its density, and estimating its wide extent, can report what water will be available for irrigation or power when the dry season follows.

This new Snow Sampling Equipment, developed by the Utah Agricultural Experiment Station and constructed to the precision standards of Friez Laboratories, embodies many new features which make it unique. Aluminum alloy, of the same high strength-weight characteristic as that used in aircraft, is incorporated for the obviously great advantage in weight reduction. The tempered spring balance is tested for an accuracy of one-half of one per cent, and

will return to its original position even after long extension by a heavy tube. It cannot be set to zero, so that each reading requires subtraction of the tare weight of empty sampler tube. The cradle is designed so that it grips the sampler tubing, obviating slippage while reading. Lengths of sampler tubing are replaceable, the replacement graduations aligning with service tubing accurately to complete a continuous tube 240 inches in maximum length.

Models and Specifications

For prices, please refer to current price list

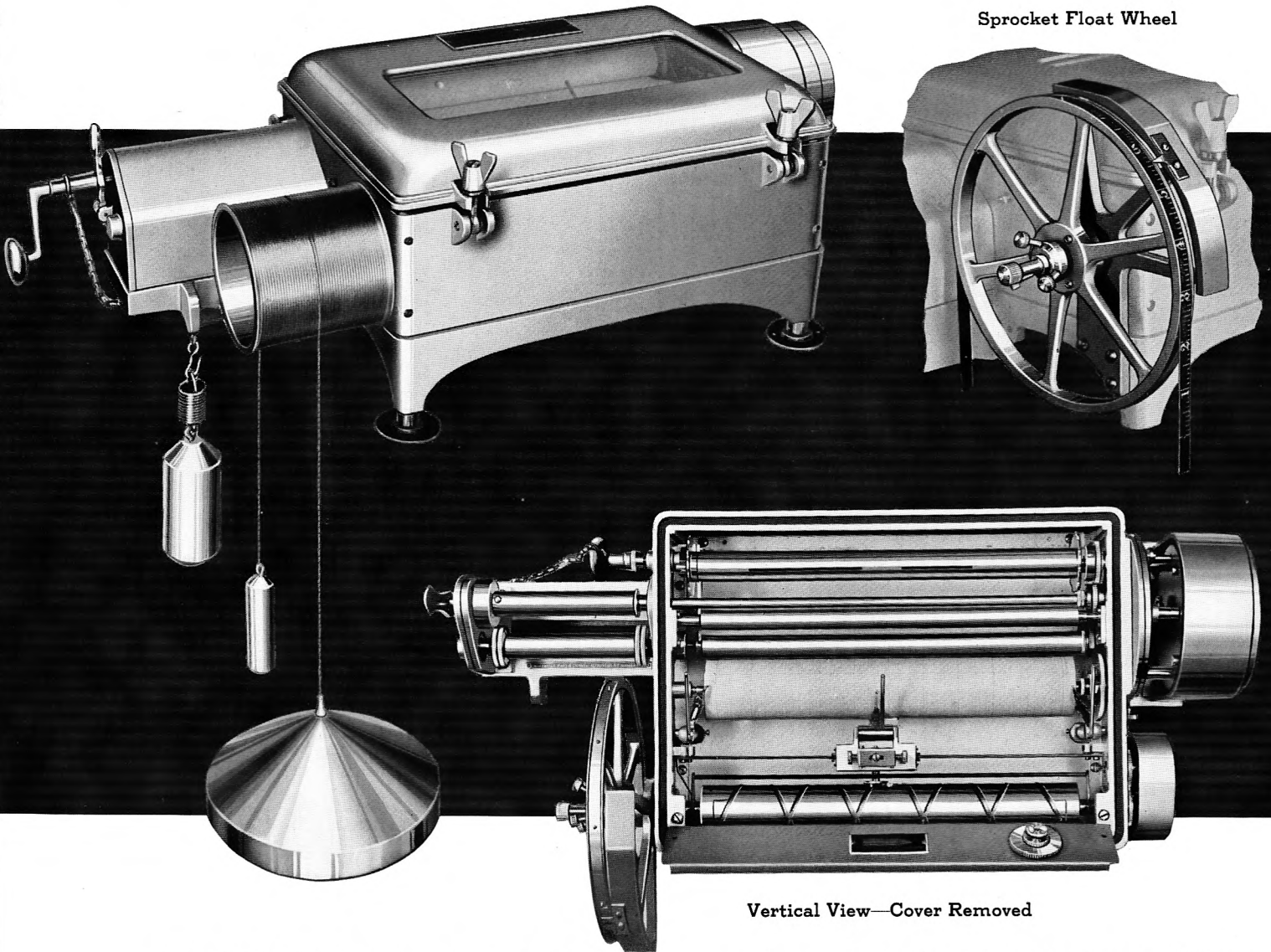
Catalog Number	Description	Range	Smallest Graduations	Gross Shipping Weight	Net Weight
410	Snow Weighing Balance, for weighing sampler sections 5 to 12½ ft. length.....	0-105 ounces	1 ounce	10 lbs.	3 lbs.
410-A	Snow Weighing Balance, for weighing sampler sections up to 20 ft. length.....				
411	No. 1 Sampler Section (with cutter).....	0-30 in.	½ in.	5 lbs.	1 lb.
411-A	No. 2 Sampler Section.....	30-60 in.	½ in.	5 lbs.	1 lb.
411-B	No. 3 Sampler Section.....	60-90 in.	½ in.	5 lbs.	1 lb.
411-C	No. 4 Sampler Section.....	90-120 in.	½ in.	5 lbs.	1 lb.
411-D	No. 5 Sampler Section.....	120-150 in.	½ in.	5 lbs.	1 lb.
411-E	No. 6 Sampler Section.....	150-180 in.	½ in.	5 lbs.	1 lb.
411-F	No. 7 Sampler Section.....	180-210 in.	½ in.	5 lbs.	1 lb.
411-G	No. 8 Sampler Section.....	210-240 in.	½ in.	5 lbs.	1 lb.
412	Spanner Wrench (used to drive long sampler sections through thick snow cover).....	.....	.....	5 lbs.	1½ lbs.

LONG TERM WATER LEVEL RECORDER, MODEL FA

A CONTINUOUS STRIP CHART TYPE FOR 90-DAY OPERATION

The standard recorder for isolated stream gaging stations

A very much smaller and lighter recorder than older models. Weighing but 34 pounds—comparable to a typewriter in size—it approaches the class of portable instruments.



Sprocket Float Wheel

Vertical View—Cover Removed

In the Model FA Recorder, a weight-driven clock and friction-free mechanism, housed in a moisture sealed aluminum case, guarantee long term continuous records under the severest conditions.

Records are made on a strip chart 10 inches wide. The pen (or pencil) carriage is float driven. Paper speed is regulated by a weight-driven clock. With the pen writing water level fluctuations back and forth across the chart and with time measured by the onward movement of the paper, a complete open-scale graph is procured, with time and water level as coordinates.

The standard float wheel offers a scale of 1 in. chart

= 12 in. water level (1:12). A simple gear-shift provides a variety of height scales (1:6, 1:12, 1:24). By installing another float wheel of basic 5:12 ratio, similar gear change provides a 10:12 ratio.

Time and height scales may be selected for anticipated conditions. Extra timing gears for use during unusual seasonal changes offer paper speeds of 1.2, 2.4, 4.8, 7.2, or 9.6 in. per day which expand or condense the graph without loss of clarity.

An accessory that differentiates between pen reversal and water level reversal, and one that shows actual paper speed independently of the clock, are also available.



Floods

Man built his settlements in the lowlands that he might live at the water's edge—and gain the many benefits of the flowing stream. Unmindful somewhat—but mainly ignorant of the excessive rains, or of the high snows melting before the April sun—and unheeding some far-off posterity, he was building in the pathway of a future, irresistible, roaring flood.

The day unforeseen, unprovided for, arrives when a panic-ridden posterity wishes its ancestors had protected the lowland town by dams and reservoirs to control the rising flood. Only long-time records of rainfall, run-off and

of high water on a river and all its tributaries can be the basis of any prophecy that the lowland town shall escape the awful sweep of destructive floods.

The stage measuring agent is a weighted spun copper float, in the form of a double cone with a cylindrical band at the water line to insure constant sensitivity. Standard floats are 10 inches in diameter, but 7-inch or 20-inch diameters are offered for special installations.

The 18-foot clock cable, which represents the total drop of the clock weight in the well, is ample for 60-day operation without rewinding if the chart travel is not faster than 2.4 inches per day. To obtain a 90-day record at this speed, it is necessary only to so feed the cable when rewinding that each wrap on the clock cable drum will lie snugly adjacent to the one adjoining it.

Charts are selected from the finest grade, care-

fully seasoned paper, suitable for recording under varying humidity conditions. The paper is printed with uniform graduations in both directions in .1 inch units. The chart, 25 yards long, is wound center line over center line and is so installed that the pen records directly upon the roll before it unwinds, making any paper misalignment errors impossible.

For installations that require ultrasupervision of records with respect to time, or where chart speeds greater than 2.4 inches per day are selected, we offer and recommend the Model FA-4. This recorder includes as in integral unit a chart speed adjustment (installed only at the factory) by which minute accumulated errors in time can be corrected.

Models and Specifications

For prices, please refer to current price list

Catalog Number	Float Diameter (Specify)	Float Wheel		Recording Medium (Specify 1 or 2)	Gross Shipping Weight	Net Weight
		(Specify Type 1 or 2)	(Specify Ratio 1 or 2)			
Model FA-3	10 in. or 7 in.	1. Positive Drive 2. Sprocket Drive (Steel tape for use with sprocket wheels is at added cost)	1. 1:12 2. 5:12	1. Pen 2. Pencil	85 lbs.	34 lbs.

Model FA-4: Same as Model FA-3 except for inclusion of factory-installed device for paper speed adjustment independently of clock.

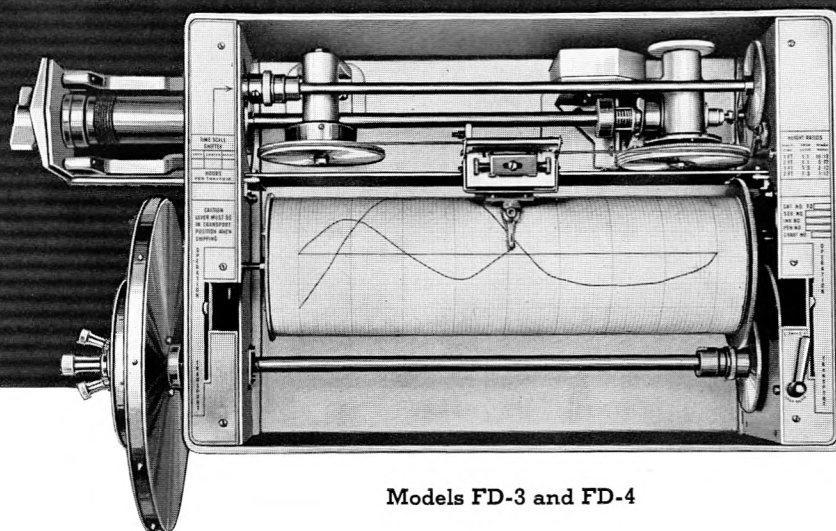
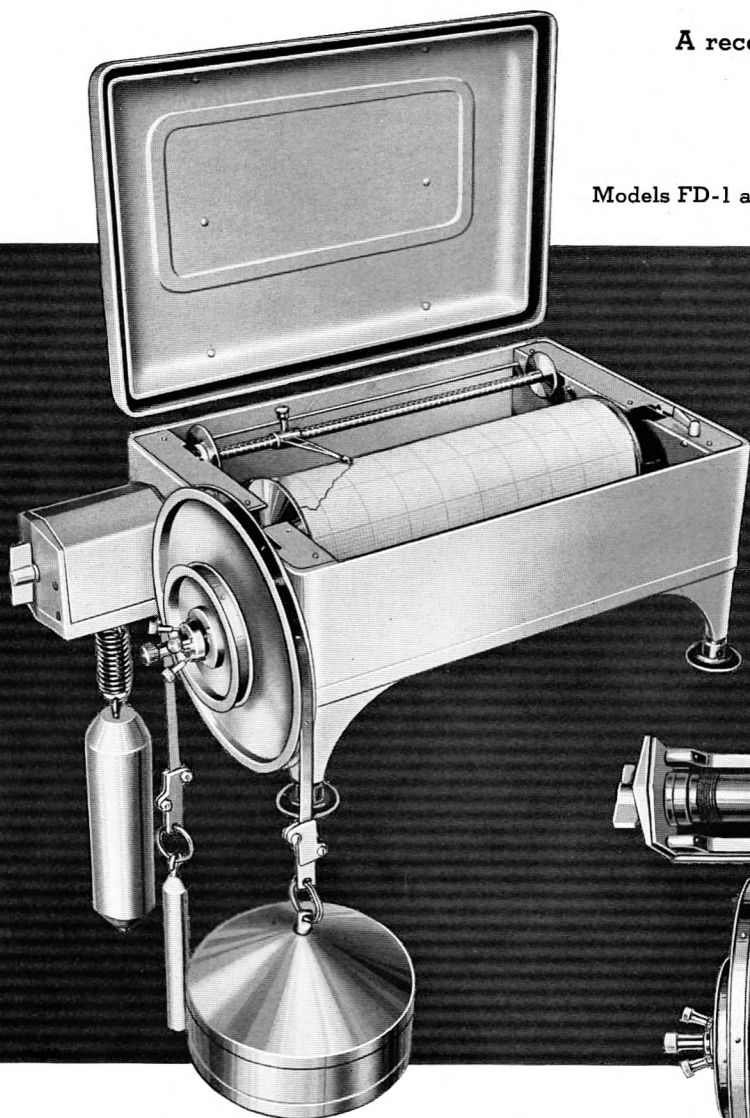
Note: Models FA-3 and FA-4, as listed above, include ink, 25-yard chart roll, clock and float cable, counterweights and complete set of instructions. Write for complete 16-page booklet describing Model FA in detail.

INTERMEDIATE AND SHORT TERM WATER LEVEL RECORDERS

HORIZONTAL DRUM MULTI-SCALE TYPE (MODEL FD)

A recent design featuring accuracy, economy, and flexible time-height scales

Models FD-1 and FD-2



Models FD-3 and FD-4

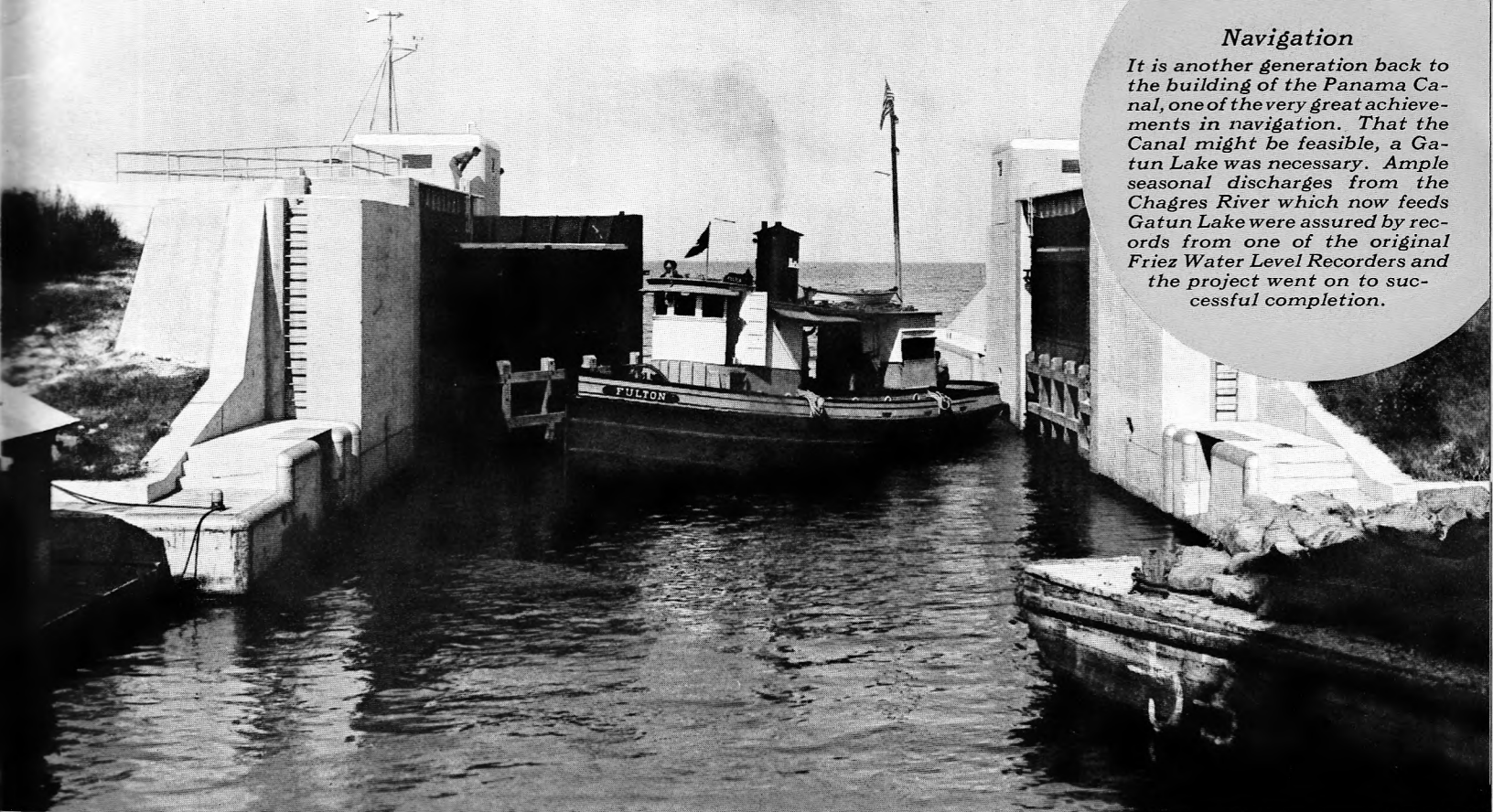
The **Daily-Weekly Recorder (Models FD-1 and 2)** has an integral gear-shift by which the time scale may be set for either a daily or a weekly period. In the daily (27-hour) period, the traverse of the pen is at the rate of 0.4 in. per hour. In the weekly period (9 days) the pen-traverse is at the rate of 0.05 in. per hour. The 27 hours for nominal daily periods and the 9 days for nominal weekly periods shows the convenient time overrun, advantageous to the operator whose duty it is to visit the gage and collect the records.

The horizontal chart drum is float driven through a carefully machined float wheel by stainless steel ribbon tape. Several height scales (1:1, 1:2, 1:5 and 1:10) are possible with finger-light integral gear-shift.

The recording drum turns lightly on special trunnion roller bearings. Moving parts between recording drum and float consist of but one set of involute gears. This friction-free design contributes greatly to the exceptional sensitivity indicated by a float wheel torque requirement of less than $\frac{1}{2}$ inch-ounce.

Navigation

It is another generation back to the building of the Panama Canal, one of the very great achievements in navigation. That the Canal might be feasible, a Gatun Lake was necessary. Ample seasonal discharges from the Chagres River which now feeds Gatun Lake were assured by records from one of the original Friez Water Level Recorders and the project went on to successful completion.



In our more modern day, at this lock on the canal connecting Lake Okeechobee with the Gulf of Mexico, water-level Indicators, including a differential Indicator of heights within and beyond the locks, efficiently control

safe navigation. A switch is thrown only after a predetermined safe differential in level exists. See page 23. Simultaneously, a recorder makes a continuous graph of the water level in the canal.

Models FD-3 and FD-4 are offered for extended time periods by automatic return of pen to starting line. Model FD-3 records in multiples of 1 or 4 days. Model FD-4 records in multiples of 8, 12 or 24 hours. At the end of each time cycle the pen carriage automatically returns to the starting line of record to resume and repeat its traverse so that the graph is always unidirectional and in the first quadrant. Height scales of 1:6, 1:12, 5:12 or 10:12 are selectable at will by instantaneous gear shift without substitu-

tion or removal of any parts. Should the operator, when he visits the gage, desire to change either the gage-height or the time scale, he can do so by shifting internal gears. An etched instruction plate with simple directions renders mistakes impossible.

Charts are printed on water-resistant, cross-section paper, with marginal space provided for station data. To make convenient use of any of the several scales provided, cross-sectioned charts are not imprinted for either gage height or time values.

Models and Specifications

For prices, please refer to current price list

Model	Time Per Chart Traverse	Time Per Minor Division	Time Scale In. Per Day	Speed Per Day	Charts		Gross Shipping Wt.	Net Weight
					Cat. No.	No. Per Set		
FD-1	1 day	15 minutes	0.4 in.	9.6 in.	1936	100	80 lbs.	28 lbs.
FD-1	8 days	2 hours	0.05 in.	1.2 in.	1936	100	80 lbs.	28 lbs.
FD-2	1 day	15 minutes	0.4 in.	9.6 in.	1936	100	80 lbs.	28 lbs.
FD-2	8 days	2 hours	0.05 in.	1.2 in.	1936	100	80 lbs.	28 lbs.
FD-3	1 day	15 minutes	0.4 in.	9.6 in.	1937	100	80 lbs.	30 lbs.
FD-3	4 days	1 hour	0.1 in.	2.4 in.	1937	100	80 lbs.	30 lbs.
FD-4	8 hours	5 minutes	1.2 in.	28.8 in.	1937	100	80 lbs.	30 lbs.
FD-4	12 hours	7½ minutes	0.8 in.	19.2 in.	1937	100	80 lbs.	30 lbs.
FD-4	24 hours	15 minutes	0.4 in.	9.6 in.	1937	100	80 lbs.	30 lbs.

Models FD-3 and FD-4 offer gage height ratios listed at right by manual gear-shift without added parts.

In a similar manner several gage height ratios are offered for FD-1 and FD-2, see page 18, last paragraph.

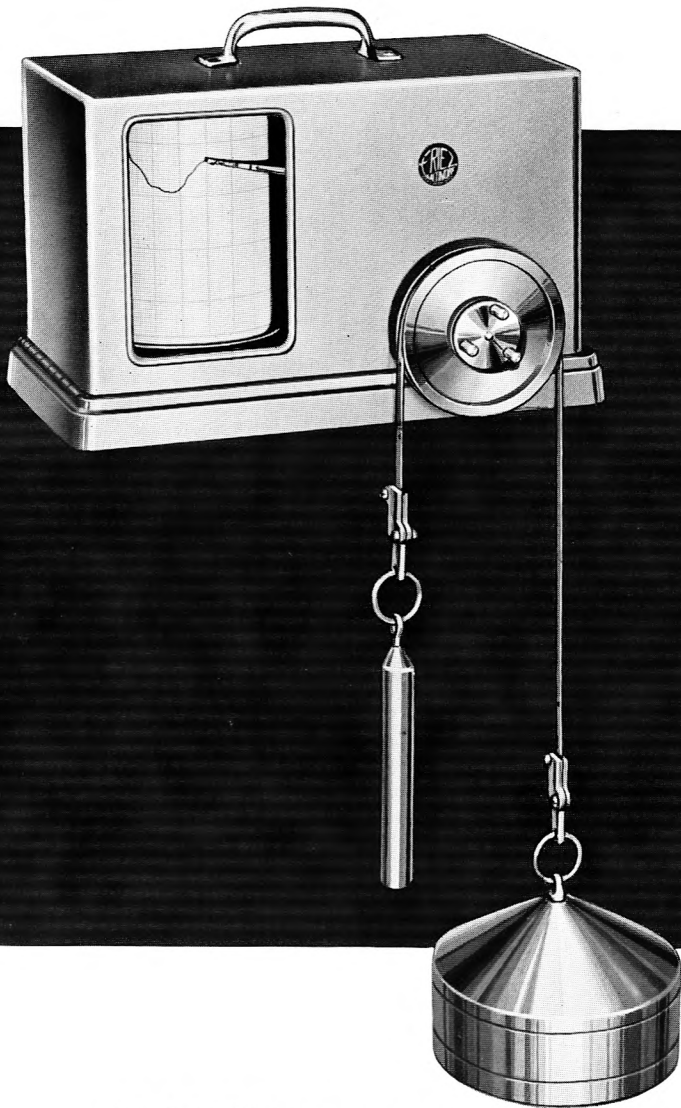
Gage-Height Ratio (Inches of Chart to Inches of Water)	One Revolution of Chart Cylinder Represents	Smallest Division of Chart Represents
10:12	1 foot	0.01 foot
5:12	2 feet	0.02 foot
1:6	5 feet	0.05 foot
1:12	10 feet	0.1 foot

PORTABLE WATER LEVEL RECORDER, MODEL FW

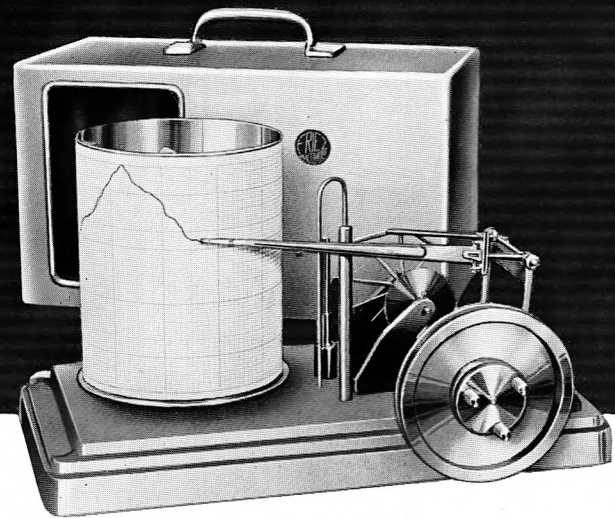
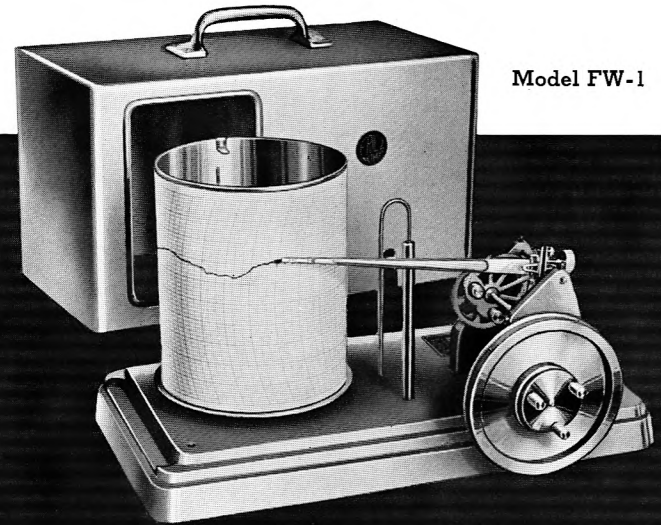
VERTICAL DRUM MULTI-SCALE TYPE

A super-sensitive and rugged recorder of wide application

Ideally suited to ground water studies or hydraulic laboratories. For flumes or weirs, or for small channels where streams may be dry except immediately after precipitation, this accurate, sensitive recorder meets every requirement.



Model FW-1



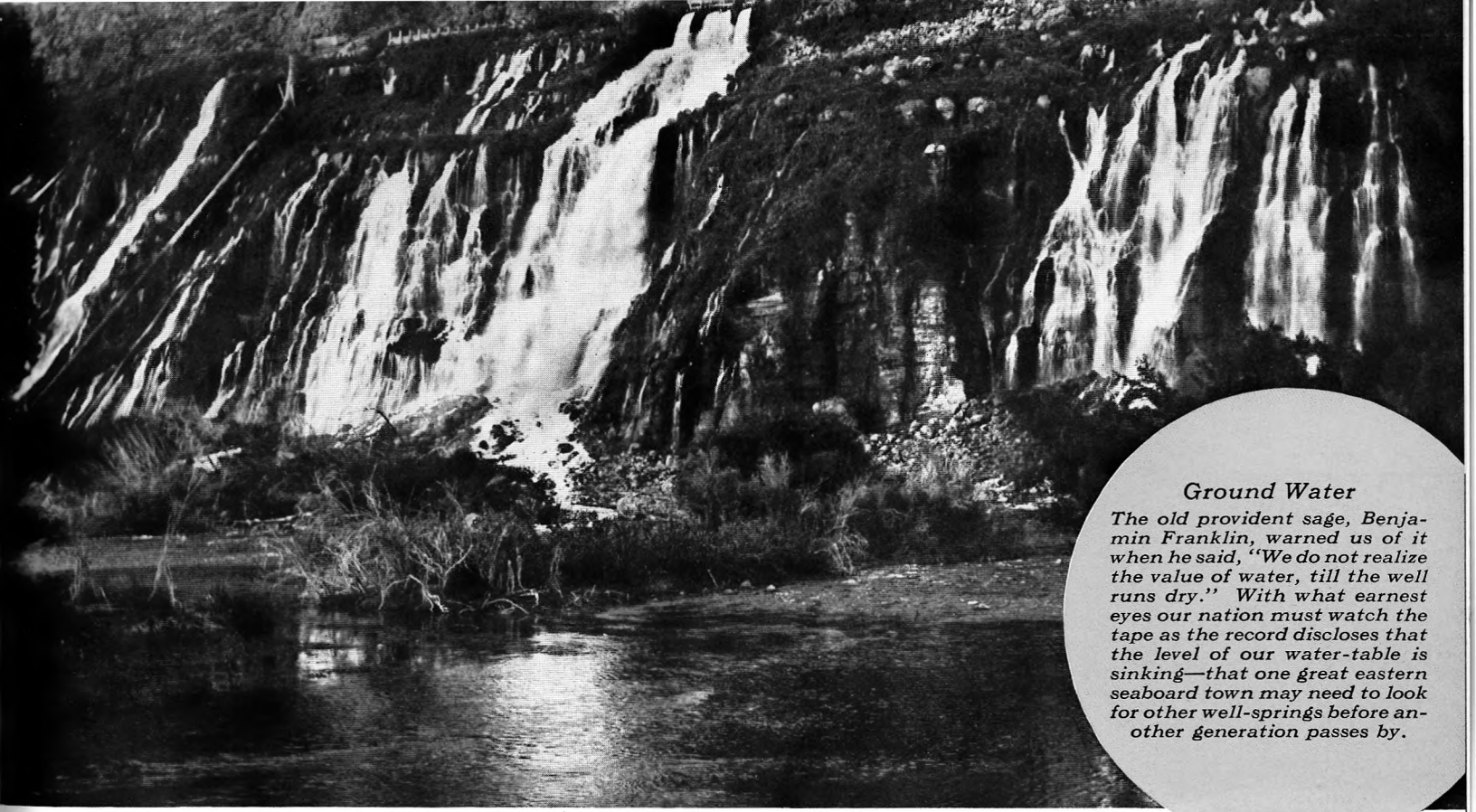
Model FW-2

Model FW-1 (Curvilinear Coordinate Type) traces its graph on a chart evenly divided by straight horizontal lines for water level. The pen actuating cam is shaped so that equal vertical pen movements always represent equal changes in water level at all sections of the chart. This simplified spacing permits ready integration of the record with an ordinary planimeter.

Equal arcs of circles form the time divisions of the graph. The curved time lines allow a simple pen actuating mechanism which induces a minimum of friction between float and recording pen. For this reason, Model FW-1 is unusually sensitive. A frictional

torque at the float wheel of less than $\frac{1}{4}$ inch-ounce is achieved in an instrument whose mechanism is adjusted to a tolerance of plus or minus .005 foot.

The stage ratio is 5:12 (5-in. chart = 12 in. water). A heart-shaped cam reverses the pen arm movement at top or bottom of the chart. Thus, an unlimited range of stage is offered in 1-foot increments by multiple traverses of the 5-inch chart. With each recorder, any one set of eight change gear combinations listed in table opposite can be supplied, each easily installed in the simplest manner.



Ground Water

The old provident sage, Benjamin Franklin, warned us of it when he said, "We do not realize the value of water, till the well runs dry." With what earnest eyes our nation must watch the tape as the record discloses that the level of our water-table is sinking—that one great eastern seaboard town may need to look for other well-springs before another generation passes by.

Our reservoirs above the ground are more easy to observe than are nature's underground reservoirs. They are replenished only by long-term processes—depending upon a medley of factors. Every fractional inch of the Water-

Table-Level needs watching; automatic water level recorders, stationed at strategic points, alone can be the sleepless sentinels of our underground water preservation.

Model FW-2 (Rectilinear Coordinate Type) graphs fluctuations in water level on a chart graduated for both time and water level change by straight lines. Water level is indicated by even divisions parallel to the instrument base. Time is indicated by similar rectangular coordinate lines parallel to the recording drum axis.

Rectangular coordinates furnish a record which is somewhat more easily interpreted, because the time at which any particular change occurs is located directly opposite the point in question. In addition

the same rates of rise or fall may be identified at different heights on the chart by direct inspection and comparison of slope.

In general construction and operation, except for a pantograph mechanism which provides a vertical pen movement, Model FW-2 is identical with Model FW-1. The pantograph, by the introduction of added parts, increases float wheel torque to slightly less than 1/2 inch-ounce. Consequently, Model FW-2 is less sensitive and somewhat less accurate than its contemporary Model FW-1.

Models and Specifications

For prices, please refer to current price list

Model FW-1: Portable Water Level Recorder, with gage height ratio of 5:12 and any one of the convertible time scales listed in the table below. Complete with 20 feet perforated stainless steel tape, 6-inch diameter (3-inch diameter optional), spun copper float, counterweight and accessories, including ink and 100 charts No. 1940 or 1941.

Model FW-2: Same as Model FW-1, except for use with rectilinear charts No. 1950 or 1951 (see table below).

Gross Shipping Weight, 30 lbs.; Net, 10 1/2 lbs.

CURVILINEAR CHARTS No. 1940 or 1941
For use with Model FW-1

Time Per Clock Revolution	Time Scale		Gears	Chart
	In. per day	In. per hour		
6 hours	57.6	2.4	6E	1940
12 hours	28.8	1.2	12E	1940
24 hours	14.4	0.6	24E	1940
6 days	2.4	0.1	144E	1940
8 hours	43.2	1.8	8E	1941
2 days	7.2	0.3	48E	1941
4 days	3.6	0.15	96E	1941
8 days	1.8	0.075	192E	1941

RECTILINEAR CHARTS No. 1950 or 1951
For use with Model FW-2

Time Per Clock Revolution	Time Scale		Gears	Chart
	In. per day	In. per hour		
6 hours	57.6	2.4	6E	1950
12 hours	28.8	1.2	12E	1950
24 hours	14.4	0.6	24E	1950
6 days	2.4	0.1	144E	1950
8 hours	43.2	1.8	8E	1951
2 days	7.2	0.3	48E	1951
4 days	3.6	0.15	96E	1951
8 days	1.8	0.075	192E	1951

WATER LEVEL TRANSMITTERS AND DISTANT INDICATORS

(SELF-SYNCHRONOUS MOTOR TYPE)

Transmitting and Indicating units for distant transmission are shown here. At the left is a typical electrically operated Transmitter for forebay and tailrace installation at Wheeler and Norris Dams; part of the Tennessee Valley Authority power development—flood control plan.



A self-synchronous position generator, housed in a moisture-proof and splash-proof case, assumes a position dictated by the float resting on the water's surface. Simultaneously, a self-synchronous receiver motor, located in the distant Indicator, follows it when interwired with three interfield wires and a common source of 110-volt 60-cycle current. The hands of the distant Indicator show the water level at the float by the dual pointer Indicator, the inner of which indicates water level to the nearest foot and the outer of which indicates elevations to .01 of a foot.

In current models, correct Indication of water level, even after possible current failure, is assured by a special resynchronizing unit in the Transmitter which

repositions both transmitting generator and Indicator motor to final correct float elevation regardless of any change which may have occurred during the off-current period. A direct-reading mechanical Indicator is also installed in the transmitter, so that the operator can read the existing water level at all times. This transmitter operates a distant Recorder, giving a continuous graph of water level as far removed as one mile from the transmitting unit. Indicators and Recorders are of standard power plant design.

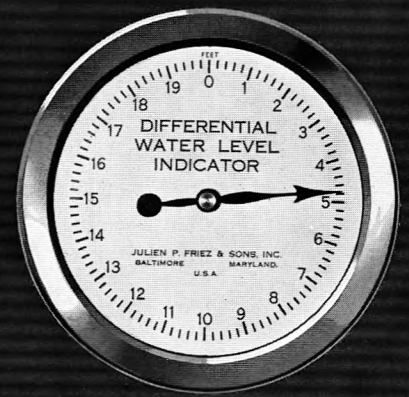
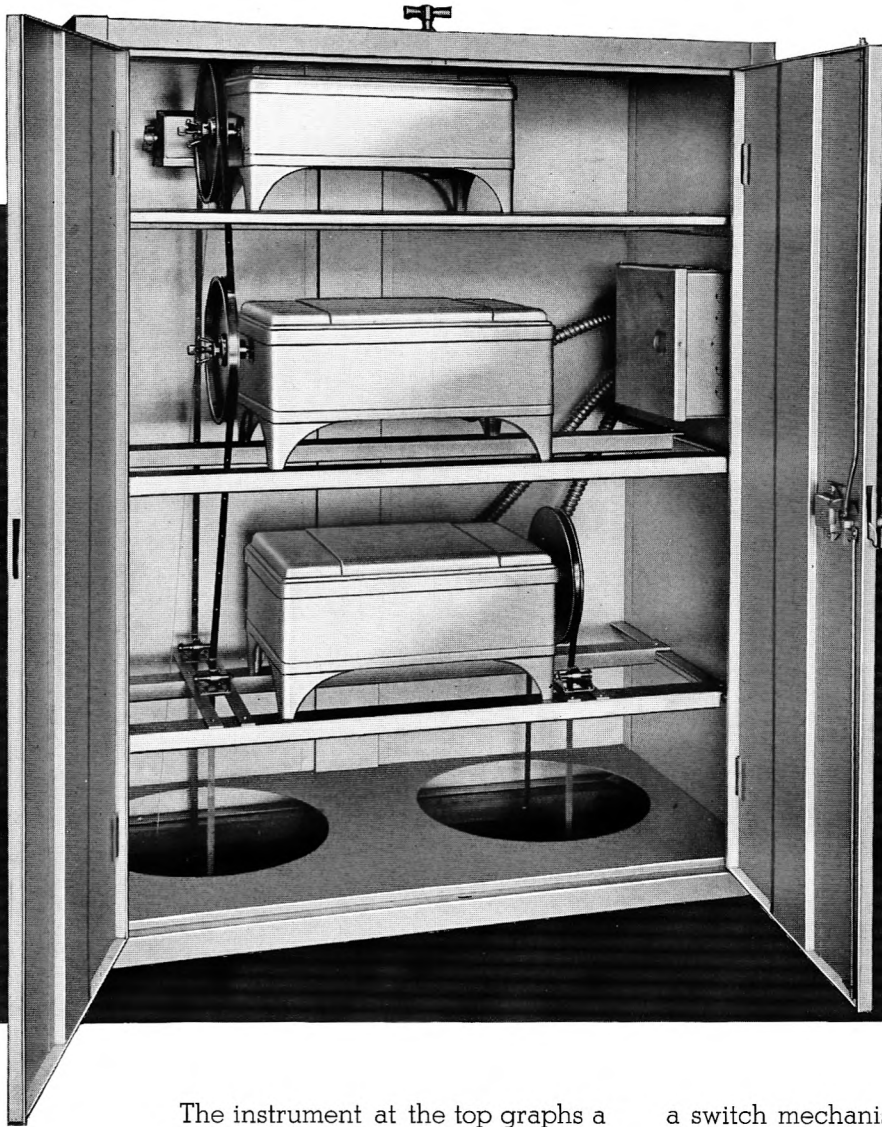
Complete engineering information and costs of these, or special instruments to your specifications, will be promptly forwarded upon request.

The services of our engineering staff are available for solution of any difficult instrumentation problem.

LOCK WATER LEVEL TRANSMITTERS, INDICATORS AND RECORDERS

(SELF-SYNCHRONOUS MOTOR TYPE)

Instruments shown in the cabinet control the operation and record the water levels at Ortona, Florida.



The instrument at the top graphs a continuous water level record of the upper pool above the lock. The lower instrument transmits the level of the pool above the lock to a Differential Indicator, so constructed as to show the difference in elevation between upper pool and lock chamber levels when transmission is received from both at once. The lock chamber is equipped with a dual water level transmitter which, by self-synchronous position motors, operates Differential Indicators between lower pool and lock chamber levels as well as between the upper pool and lock chamber levels. The Differential Indicator illustrated is equipped with

a switch mechanism in series with the gate control. Until the water level between the lock chamber and the pool in question reaches a predetermined safe value, the operator is unable to open the gates between them.

These instruments, while in some cases not standard items, are easily duplicated for special orders by the Friez Company, leaders in the field of hydrometric measurement, hydrological surveying and water level indication and control. **Let us help you solve your problem. No matter how special it may be, the consulting capacity of our entire engineering staff is at your disposal.**

Of those who through the past three score years have become acquainted with the name of Friez, few realize the extensive lines of instruments and controls in various fields that are of Friez manufacture.

Products of the Friez Laboratories cover the entire field of Weather and Indoor Air-Conditioning.

● **FOR WEATHER**

Thermometers
Thermographs
Sling and Whirling Psychrometers
Electrically Fanned Psychrometers
Mercurial Barometers
Recording Barometers
Anemometers
Wind Speed Indicators
Wind Speed Recorders
Speed and Direction Recorders
Four Condition Weather Recorders
Measuring Rain Gages
Automatic Indicating Rain Gages
Tipping Bucket Rain Gages
Electrical Rainfall Recorders
Weighing and Recording Rain Gages
Sunshine Duration Recorders
Special Installations for Display or Industrial Purposes

● **FOR AEROLOGY**

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Recording Altimeters
Airplane 3 Condition Meteorographs
Balloon 3 Condition Meteorographs
Kite 4 Condition Meteorographs
Ultraprecision Barographs

● **FOR AIR-CONDITIONING**

Humidity Controllers
Humidity Indicators
Temperature Controllers
Effective Temperature Controllers
Window Condensation Controllers
Pocket and Standard Psychrometers
Hand Psychrometers
Electrically Fanned Psychrometers
Humidity Recorders
Humidity-Temperature Recorders
Recorders of Remote Conditions
Hand Anemometers
Air Flow Meters

● **FOR HYDROMETRY**

Water Stage Recorders
Water Stage Indicators
Water Stage Distant Transmitters
Water Stage Distance Recorders
Evaporation Hook Gages
Snow Sampling Equipment

If you will indicate your particular interest on the enclosed card, we will gladly do our part by sending you fresh interesting news of current instrument developments.

JULIEN P. FRIEZ & SONS, INC.

BALTIMORE MARYLAND

(Subsidiary of Bendix Aviation Corp.)

“The Makers of America’s Weather Instruments”

ERIE
BALTIMORE

1876

1937

61

YEARS



PRICE LIST—(Continued)

PRICE F. O. B.
BALTIMORE, MD.

CATALOG NUMBER	CATALOG PAGE NUMBER	DESCRIPTION	PRICE
418	11	Rainfall Recorder.....	\$185.00
740	13	Evaporation Hook Gage.....	65.00
741	13	Evaporation Hook Gage.....	65.00
743	13	Evaporation Hook Gage.....	22.50
744	13	Evaporation Hook Gage.....	22.50
745	13	Still Well.....	25.00
760	3	Recording Rain and Snow Gage.....	212.00
761	3	Recording Rain and Snow Gage.....	217.00
762	3	Recording Rain and Snow Gage.....	235.00
763	3	Recording Rain and Snow Gage.....	240.00
766	3	Recording Rain and Snow Gage.....	217.00
766-6H	3	Recording Rain and Snow Gage.....	217.00
767	3	Recording Rain and Snow Gage.....	240.00
768	3	Recording Rain and Snow Gage.....	215.00
769	3	Recording Rain and Snow Gage.....	220.00
765-A	7	Recording Rain Gage.....	195.00
765-B	7	Recording Rain Gage.....	210.00
779	5	Recording Rain and Snow Gage.....	On Request
FA-3	17	Long Term Water Level Recorder.....	216.00
FA-4	17	Long Term Water Level Recorder.....	228.00
FD-1	19	Intermediate and Short Term Water Level Recorder.....	135.00
FD-2	19	Intermediate and Short Term Water Level Recorder.....	135.00
FD-3	19	Intermediate and Short Term Water Level Recorder.....	155.00
FD-4	19	Intermediate and Short Term Water Level Recorder.....	155.00
FW-1	21	Portable Water Level Recorder.....	70.00
FW-2	21	Portable Water Level Recorder.....	70.00
—	22	Distant Indicators, Transmitters and Recorders of Water Level.....	On Request
—	23	Distant Indicators, Transmitters and Recorders of Water Level.....	On Request

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PERMIT No. 565
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Baltimore, Md.



STANDARD RECORDERS FOR RAIN, SNOW AND WATER LEVEL

CURRENT PRICE LIST—EFFECTIVE AUGUST 1, 1937

(Prices Subject to Change Without Notice)

CATALOG NUMBER	CATALOG PAGE NUMBER	DESCRIPTION	PRICE F. O. B. BALTIMORE, MD.
398	9	Indicating Rain and Snow Gage, complete.....	\$16.00
398-A	9	Glass Graduate only, for No. 398 Rain and Snow Gage.....	7.50
400	9	Indicating Rain and Snow Gage, complete with support and measuring stick.....	27.50
400-A	9	Indicating Rain and Snow Gage only, without wrought iron support but with measuring stick.....	20.00
400-B	9	Indicating Rain and Snow Gage, complete with sheet steel support and measuring stick.....	17.50
400-C	9	Indicating Rain and Snow Gage only, without sheet steel support but with measuring stick.....	14.00
401	11	Measuring Stick only, for Nos. 398, 398-A, 400, 400-A, 400-B, 400-C when purchased separately.....	1.00
405	11	Indicating Rain Gage.....	95.00
406	11	Transmitting Rain Gage.....	105.50
410	15	Rainfall Recorder.....	175.00
410-A	15	Snow Weighing Balance.....	15.00
411	15	Snow Weighing Balance.....	15.00
411-A	15	No. 1 Snow Sampler Section (with cutter).....	17.50
411-B	15	Cutter Only.....	5.00
411-C	15	No. 2 Snow Sampler Section.....	12.50
411-D	15	No. 3 Snow Sampler Section.....	12.50
411-E	15	No. 4 Snow Sampler Section.....	12.50
411-F	15	No. 5 Snow Sampler Section.....	12.50
411-G	15	No. 6 Snow Sampler Section.....	12.50
412	15	No. 7 Snow Sampler Section.....	12.50
415	11	No. 8 Snow Sampler Section.....	15.00
416	11	Snow Sampler Spanner Wrench.....	105.50
417	11	Transmitting Rain Gage.....	185.00
		Rainfall Recorder.....	175.00

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JULIEN P. FRIEZ & SONS, INC.

"The Makers of America's Weather Instruments"

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| <input type="checkbox"/> Thermographs | <input type="checkbox"/> Ultraprecision Barographs |
| <input type="checkbox"/> Sling and Whirling Psychrometers | <input type="checkbox"/> Humidity Controllers |
| <input type="checkbox"/> Electrically Fanned Psychrometers | <input type="checkbox"/> Humidity Indicators |
| <input type="checkbox"/> Mercurial Barometers | <input type="checkbox"/> Temperature Controllers |
| <input type="checkbox"/> Recording Barometers | <input type="checkbox"/> Effective Temperature Controllers |
| <input type="checkbox"/> Anemometers | <input type="checkbox"/> Window Condensation Controllers |
| <input type="checkbox"/> Wind Speed Indicators | <input type="checkbox"/> Pocket and Standard Psychrometers |
| <input type="checkbox"/> Wind Speed Recorders | <input type="checkbox"/> Hand Psychrometers |
| <input type="checkbox"/> Speed and Direction Recorders | <input type="checkbox"/> Electrically Fanned Psychrometers |
| <input type="checkbox"/> Four Condition Weather Recorders | <input type="checkbox"/> Humidity Recorders |
| <input type="checkbox"/> Sunshine Duration Recorders | <input type="checkbox"/> Humidity-Temperature Recorders |
| <input type="checkbox"/> Special Installations for Display or Industrial Purposes | <input type="checkbox"/> Records of Remote Conditions |
| <input type="checkbox"/> Altitude Barographs | <input type="checkbox"/> Hand Anemometers |
| <input type="checkbox"/> Recording Altimeters | <input type="checkbox"/> Air Flow Meters |
| <input type="checkbox"/> Airplane 3-Condition Meteorographs | <input type="checkbox"/> Water Stage Distant Transmitters, Indicators and Recorders |
| <input type="checkbox"/> Balloon 3-Condition Meteorographs | |

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