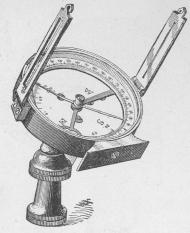
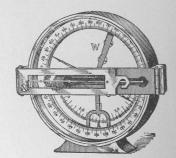
SURVEYING COMPASSES

Continued



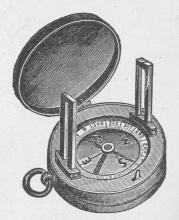


As Compass.

No. 5961.

As Clinometer.

No. 5961. Surveying Compass and Clinometer, bronzed, with folding sights ending in hooks, graduated to degrees, with ball joint and socket for Jacob-staff mounting, needle about 2 in., in case, Each, \$12 60

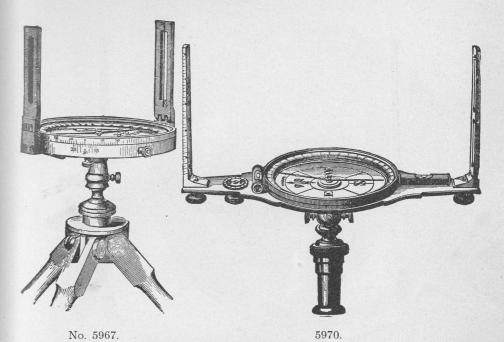


No. 5965.

SURVEYING COMPASSES

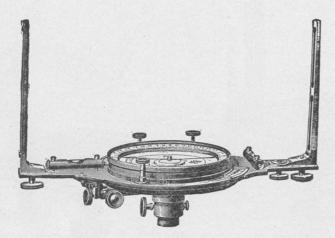
Continued

215



The Vin Estieren Company

RAILROAD COMPASSES



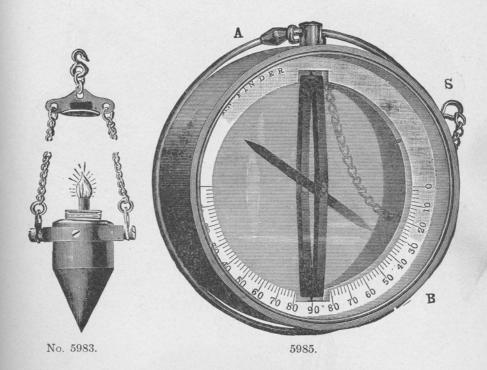
No. 5980.

110. 5960.	Ramoad Compass. The Ramoad Compass has the main plate,
	levels, sights and needle, Jacob-staff mountings, brass cover,
	out-keeper, and vernier for setting off the variations of the
	needle of the ordinary Surveyors' Compass, but has also under-
	neath the main plate a divided circle or limb, by which hori-
	zontal angles to single minutes can be read independently of
	the needle, in mahogany box with lock and strap, $5\frac{1}{2}$ in. needle,
	one vernier to limb, Each, \$65 00

5981.	Railroad Compass.	Same	as	No	. 598	0, but	with !	in.	nee	dleand		
	two verniers to limb									Each,	75	00

5982.	Railroad Compass.	Same	as	No.	5980,	but	with	$5\frac{1}{2}$	in.	needle		
	and two verniers to 1	imb,								Each,	80	00

MINERS' COMPASSES AND LAMP

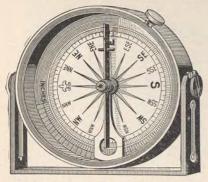


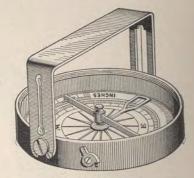
ing needle $2\frac{1}{2}$ in, long, mounted in a brass ring graduated 0 to 180° in each direction, and having plate glass top and bottom.

When used for tracing ore, the prospector should hold the ring in his hand and keep the needle north and south, standing with his face to the west; in case, Each, 12 00

5987. Meridian Finder, or Miners' Compass, 3½ in. in diameter. The advantage of this compass is that the needle has a motion in azimuth as well as in altitude, thus insuring the needle finding its true meridian. Also that the needle is suspended in such a way that it turns easily with nothing to impede its revolution; by this means you have a perfect test in reversing the needle. Another advantage is that the needle is, and can be made more sensitive than other needles of this kind; in case, Each,

SIGHT COMPASS AND CLINOMETER

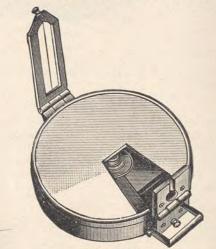




No. 5988-As Clinometer.

As Sight Compass.

PRISMATIC COMPASSES

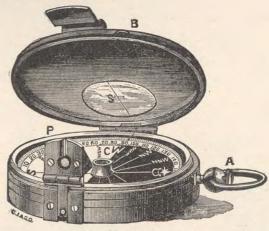


No. 5990

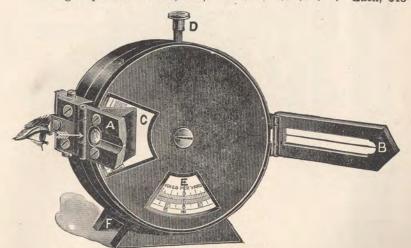
	2101 00001	
No. 5990	. Hutchinson's Prismatic Compass, bronzed, of improved pat-	
	tern, nearly enclosed top, floating card dial, 2 in., in moroco case. Each, \$11	00
	case	01
5991.	Same as No. 5990 3 in in leather sling case "16	00

PRISMATIC COMPASSES

Continued



No. 5995.

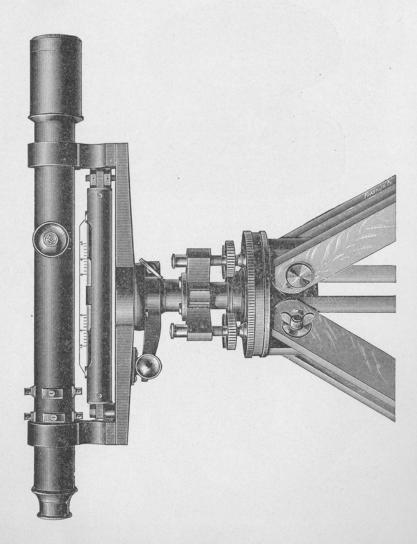


No. 5997.

The Vin Estieren Company

ENGINEERS' DUMPY LEVEL

Each Instrument of our make is warranted to be first-class in every particular



No. 6025.

No. 6025. Engineers' Dumpy Level, as described on next page, with steel center and telescope of 29 dia. magnifying power, showing objects erect, complete, with tripod No. 6204, box, etc., Each, \$100 00

ENGINEERS' DUMPY LEVEL

Continued.

Cut No. 6025 represents the Engineers' Dumpy Level, as made by us.

We have made this instrument of various different sizes, the length of telescopes ranging from 15 to 18 inches, both with erecting and inverting eye-pieces.

With a Dumpy Level, of our make, possessing all the good qualities, POWERFUL TELESCOPE, long, sensitive level, steel center and stability, we feel confident that the results of the work will fully equal those of the best Y level. While the adjustment of the latter is made easier, yet, there being less parts to former, it will retain its adjustment longer.

The instrument, as illustrated, has a telescope 15 inches long, provided with DUST PROTECTOR over object slide and eye-piece, magnifying power 28 to 30 dia., object glass 1½ inches dia., level tube 7½ inches long, clamp and tangent screw and steel center.

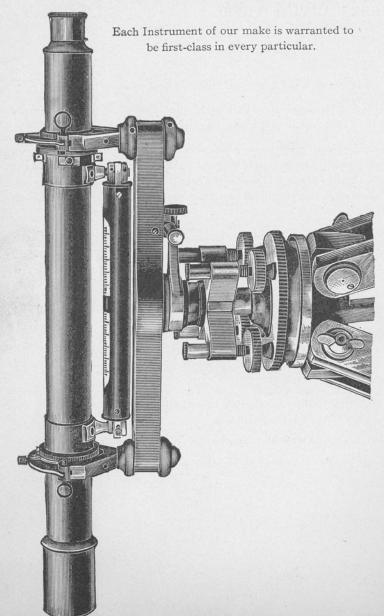
The leveling screws are protected by dust caps and are provided with ball and socket cups.

Weight of instrument, 8 pounds; weight of tripod, about $7\frac{1}{2}$ pounds.

No. 602	Bever, with 10 men telescope, including the
	pod No. 6204, box, etc., complete, Each, \$100 00
6026	Same as above, without tangent screw, Each, 90 00
2, 6027	telescope, showing objects
	erect or inverted, Each, 110 00

The Vin Estieren Company.

ENGINEERS' Y LEVEL-18-INCH



6030.

ENGINEERS' Y LEVEL

Continued

No. 6030. Engineers' Y Level: The main qualities to be secured in a Level are stability, a powerful telescope, and a sensitive bubble. In regard to the first point, an examination of the cut will suffice to show that this has been accomplished in a most perfect manner.

The upper parallel plate is of extra large diameter, enabling the application of a more sensitive bubble than is generally found. The center is very long, extending from the bar to the bottom of the lower parallel plate, and is made of steel, which, it is evident, adds to the strength of the instrument and also increases its accuracy and stability. The liability of bending the spindle, so common on instruments having brass centers, and the fretting of the same, is altogether avoided by a steel center, and we gladly bear the extra expense in its manufacture. The leveling screws are provided with dust caps and ball and socket cups. The cross bar is 12 inches long, and is made of the best composition metal. The collars are made of the hardest bell metal, and of exactly the same diameter. The telescope is provided with a vertical stop, so as to bring the cross hairs in a true vertical and horizontal position. The object slide and eye-piece are provided with pust protectors.

The telescope is of the best definition, 18 inches long, with object glass of 1\stacks inches diameter, used to its full value; new improved eye-piece, giving a large, flat field, and provided with an improved screw-like focusing arrangement, for precise focusing of cross hairs; magnifying power 33 to 35 diameters. The level vial is eight inches long and highly sensitive. Such a bubble will be of good service only with an instrument perfectly steady, and provided with a powerful and sharply defining telescope.

Weight of this instrument, with tripod, eighteen pounds.

The instrument is packed whole, and stands erect in a nicely finished cherry-wood box, which is provided with lock, hooks, strong leather strap, and contains sun-shade and several adjusting pins. The tripod bolts are also furnished with thumb nuts.

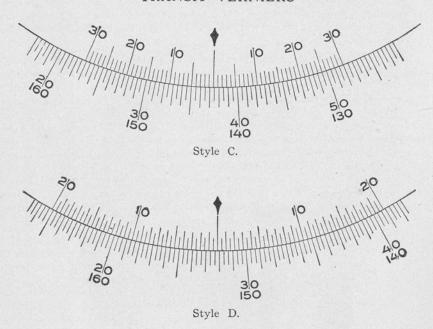
No. 6030. Complete, with tripod No. 6204, box, etc., . . . Each, \$130 00

- 6031. Engineers' Y Level: The same instrument as No. 6030, but with reversion level; complete with tripod No. 6204, box, etc., Each, 140 00
- 6032. Engineers' Y Level: The same instrument as No. 6030, but with three leveling screws and extra large tripod head; complete, with tripod No. 6204, box, etc., Each, 140 00

Any of above instruments, when furnished with bell metal center instead of steel center, \$5 00 less.

Y Levels with 20 or 22 in. Telescopes made to order.

TRANSIT VERNIERS



The limb and verniers of our high grade Transits are all graduated on solid silver, and made to read by vernier either to single minutes, Style "C" or 30 seconds, Style "D." The limb and verniers are exactly on the same plane, which excludes any parallax.

We are prepared to make and furnish to order graduations of any desired fineness, and number them according to the special wishes of our customer.

GENERAL CONSTRUCTION

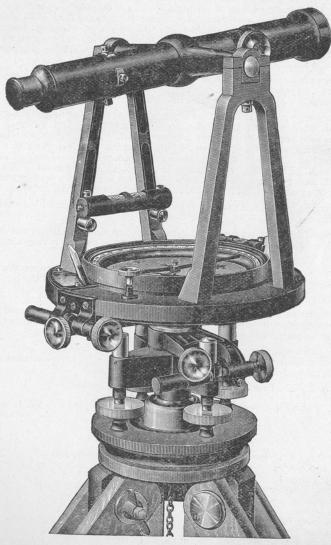
Upon examining the cuts it will be noticed that all our instruments are prorided with all the latest improvements. By the judicious placing of the centers
which reach to the base of lower parallel plate, we bring the limb and vernier
plate in our Transits, and the level bar and "Y's" of the Y Level closer to the
tripod head than any other make, thus insuring the utmost stability.



225

ENGINEERS' TRANSIT—PLAIN

Each instrument of our make is warranted to be first-class in every particular.



No. 6035.

No. 6035. Plain Engineers' Transit, as described on next page, complete, with tripod No. 6204, box, etc., Each, \$175 00

Continued

ENGINEERS' TRANSIT

order the same graduated on solid silver.

The Engineers Transit No. 6035 is our standard size for general engineering, and will meet the requirements of the highest class of engineering, such as hydraulic, bridge building, city and land surveying. The diameter of limb is $6\frac{1}{2}$ inches to the edge of graduation, with two double (exactly opposite) verniers, reading to 30 seconds or single minutes in all instruments kept on hand. If ordered we can furnish verniers reading to 20 or 15 seconds. In this case we advise our customers to

The verniers are placed at an angle of 30° to line of sight, and the graduation is marked with two rows of ngures, one reading from 0 to 180 and the other from 0 to 360; the figures are inclined in the direction they are to be read.

The magnetic needle is 4½ inches long. The level vials are ground extra sensative, and divided to allow a precise leveling up. Improved Tangent Screw to Limb. Shifting centers to set over a given point. New improved telescope 11½ inches long, with magnifying power of 26 diameters. Object glass of a full aperture of 1½ inches. Improved achromatic eye-piece, with abundance of light, and a large flat field. The line of collimation is correct at all distances. The telescope is balanced, and reverses at both ends. Object slide and eye-piece are provided with dust guards. The centres are 3½ inches long, with substantial flanges

The leveling screws are protected by dust caps and are provided with ball and socket cups.

The tripod head as now made by us is of one single casting, the lugs are of extra width and are cast hollow, with a hub left in the center, giving ample bearing for the bolts which fasten the tripod legs.

The legs are made of well-seasoned cherry hardwood, the upper portion being split with a tongue inserted at the top to guard against splitting of the leg.

The bolts are provided with thumb nuts.

In stadia measurements, which method is now more extensively used, especially by railroad engineers in rough country, where it will give better results than chaining, our new telescope will be of special service.

The instrument is securely packed in a nicely finished cherry-wood box, which is provided with a strong leather strap, lock, etc., and contains sun-shade, plumb bob, magnifying glass and several adjusting pins.

Weight of plain Transit No. 6035, with tripod, 21 pounds.

EXTRAS

Improved Solar Attachment No. 6088, as described on page 290,			50 00)
Vertical Circle, 5 in. diameter, Graduation on Solid Silver,	reading	to		
Vertical Circle, 5 m. diameter, Gradultus			20 00	
1 minute, Vertical Arc, Graduation on Solid Silver, reading to 1 minute,			20 00	
Level to Telescope,			10 00	
Paversion Level			10 00	
Clamp and Tangent Screw to Axis			10 00	
Graduation on Solid Silver			10 00	
Graduation on Solid Silver, and reading to 20 seconds.			3 00	
Fixed Stadia Wires to cover 1' in 100' on any rod,			10 0	
Tr : .: Di-t Dools and Pinion			5 0	
Variation Plate, with Rack and Fillon, Variation Plate, with movable compass ring and index point,			4 0	
Gradienter Screw,			3 0	
Ground Glass Vernier Shades, Aluminum Guard for Vertical Circle as shown in cut No. 6066,			4 0	0
Aluminum Guard for Vertical Circle as shown in cut No. 3000,				

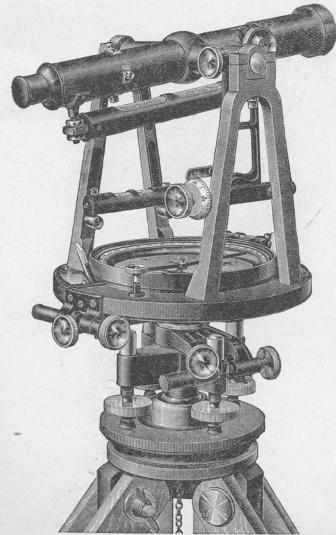


227

ENGINEERS' TRANSIT

WITH LEVEL ATTACHMENT

Each Instrument of our make is warranted to be first-class in every particular.



No. 6045.

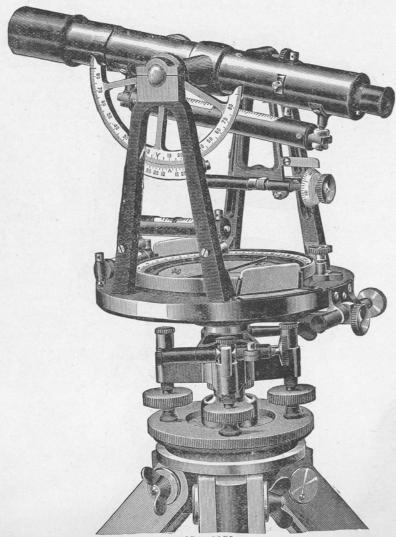
No. 6045. Engineers' Transit, with Level Attachment (the description given under No. 6035 also applies to this number), with gradienter screw, fixed stadia hairs, vernier shades, and graduation on solid silver; complete, with tripod No. 6204, box, etc., Each, \$215 00 Same as above, with graduation on brass, silvered; complete, with tripod No. 6204, box, etc., Each, 205 00

229

ENGINEERS' TRANSIT

WITH LEVEL ATTACHMENT AND VERTICAL ARC

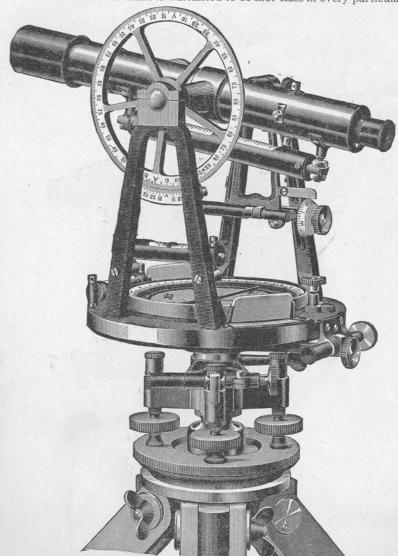
Each Instrument of our make is warranted to be first-class in every particular.



No. 6050.



ENGINEERS' TRANSIT
WITH LEVEL ATTACHMENT AND VERTICAL CIRCLE
Each Instrument of our make is warranted to be first-class in every particular.



No. 6055.

LIGHT MOUNTAIN AND MINING TRANSIT

Continuea

Light Mountain and Mining Transit No. 6066 (see illustration on preceding page), represents a complete mountain transit of its kind, the general construction is in every respect the same as a larger instruments differing only in size and weight.

The important parts such as the centers and the telescope axis are made extra strong so as to permit of attaching a side, or top telescope if desired and to bring the instrument more within the range of the larger mining transit.

The $4\frac{1}{4}$ in. horizontal limb is graduated to $\frac{1}{2}$ degrees, on solid silver and is read by two double opposite verniers to single minutes; the circle has two rows of figures, the inside row is numbered into quadrants and the outside row from 0 to 360.

The vernier openings are parallel to line of sight so as to permit the application of a longer plate level. The compass needle is $2\frac{3}{4}$ in. long and the vertical circle $4\frac{1}{4}$ in. diameter and is protected with an aluminum guard. The inverting telescope is $7\frac{1}{2}$ in. long, has a magnifying power of 18 dia., is provided with dust guard over object slide and a 4 in. sensitive level. The instrument is furnished with improved clamps and tangent screws; and has shifting center and is securely packed in a highly finished case which is provided with hooks, leather strap, etc., and contains sun-shade, plumb bob and several adjusting pins.

Weight of instrument, 51 pounds.

Weight of light extension tripod with thumb nuts, 5 pounds.

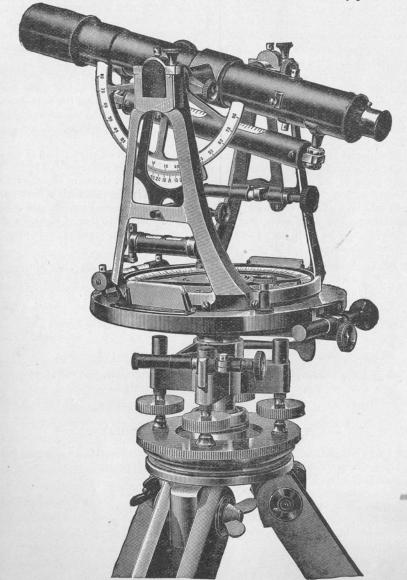
No. 6066. Light Mountain and Mining Transit, with vertical circle, aluminum guard, level to telescope, vernier shades, fixed stadia hairs, graduation on solid silver; complete, with light extension tripod No. 6208, box, etc., Each, \$210 00

EXTRAS TO LIGHT MOUNTAIN TRANSIT

Extra side or top telescope,	 	. \$30 00
Variation ring to needle,	 	. 5 00
Colored glass for solar observation in eye-piece slide,		
Reflector for illuminating cross hairs,	 	3 00
Leather cover for case, with shoulder strap,		

TRANSIT THEODOLITE

Each Instrument of our make is warranted to be first-class in every particular.



No. 6075.

No. 6075. Transit Theodolite, for use in cities, tunnels, and for triangulation (see description on next page); complete, Each, \$275 00



TRANSIT THEODOLITE

Continued

This instrument, as shown in the accompanying engraving, has been designed for the highest class of engineering work, for use where instruments of ordinary construction fail to give satisfaction or do not permit of rapid work, where the highest degree of accuracy is desired. The telescope standard is of a new design, it is circular in form and is made of one solid casting, which still preserves the $4\frac{1}{2}$ incompass needle to the instrument.

The uprights are well ribbed, which gives great lateral strength and permits the use of cylindrical bearings for the telescope axis; this assures to the telescope the most perfect motion in the vertical plane. The caps, which hold the telescope axis in its bearings, are provided with an adjusting screw with which the desired amount of friction can be applied so as to hold the telescope in any position, and are also so arranged to exclude all dust from the bearings.

The horizontal circle is $6\frac{1}{4}$ in. diameter, is graduated on silver, and is read by two double exactly opposite verniers to 30'' or 20''. The telescope is $11\frac{1}{2}$ in. long, object glass $1\frac{1}{4}$ in. aperture, magnifying power 26 dia., showing objects erect or inverting, as may be ordered, and the object slide is provided with dust guard. Extra sensitive level to telescope, improved clamp and tangent screws, and covered graduation. The vernier opening can be placed parallel to line of sight, or at an angle of 30° , or at right angles as shown in cut. The 5 in. vertical arc is provided with movable vernier and tangent screw.

No.		Transit Theodolite (see illustration on preceding page), has 5 in. vertical arc, reversible clamps, level to telescope, vernier shades, fixed stadia hairs, and all graduations on solid silver; complete, with tripod No. 6204, box, etc.,
	6076.	The same instrument furnished with three leveling screws and shifting center; complete,
	Weight	t of instruments Nos. 6075 and 6076, complete, $13\frac{1}{2}$ pounds.
	6077.	Plain Transit Theodolite without vertical circle, but with level to telescope and clamp and tangent screws to telescope; com-

EXTRAS TO TRANSIT THEODOLITE.

plete, Each, 220 00

Full 5 in. Vertical Circle, graduated on silver, reading to minutes, .		\$25 00
Full 5 in. Vertical Circle, double verniers, reading to minutes,		40 00
Graduation on Horizontal Limb, reading to 20",		10 00
Graduation on 7 in. Horizontal Limb, reading to 10",		30 00
Reversion Level,		10 00
Level to Telescope with reversible clamp,		25 00
Attached Reading Glasses to Verniers,		10 00
Fixed Stadia Hairs,		. 3 00
Striding Level,		15 00
Gradienter Screw,		4 00
Gossamer Cover for Instrument,		1 00



PRICES OF PARTS OF INSTRUMENTS LIABLE TO LOSS OR INJURY

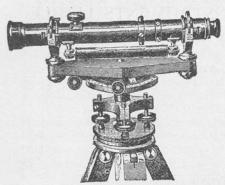
Needle, having the largest breadth in a vertical direction, which is	far	
superior to the flat style,	. Each,	\$4 00
Center Point,		75
Center Cap, with jewel,	. "	1 50
Center Cap, with steel center,	"	1 75
Cap for eye-piece or object glass,	"	1 00
Shade for object glass,	. "	75
Clamp screws for horizontal limb, telescope clamp or lower tange	ent move-	
ment,	. Each,	75
Leveling Screws, Per set, \$5	00 . "	1 50
HE 12.10 HOURS HE HE HOURS HE HE HE HOURS HE HOURS HE HOURS HE HOURS HE HOURS HE HOURS HOURS HOURS HOURS HOURS HE HOURS HE HOURS HO		
Tangent Screws for any of our Transits or Levels,	. "	1 25
Tangent Screws for any of our Transits or Levels,		1 25 7 00
Object Glass, best quality, for Transits (mounted),		7 00
Object Glass, best quality, for Transits (mounted), Object Glass, best quality, for Y Levels,		7 00 9 00
Object Glass, best quality, for Transits (mounted), Object Glass, best quality, for Y Levels, Eye Lense and Setting for any eye-piece,	. "	7 00 9 00 1 50
Object Glass, best quality, for Transits (mounted), Object Glass, best quality, for Y Levels, Eye Lense and Setting for any eye-piece, New Cross Hairs and adjusting,		7 00 9 00 1 50 2 00

MISCELLANEOUS

Highly finished Cherry or Mahogany Case, with Lock, Hooks	, ar	d I	eather		
strap fitted for Transit or Level,			Each,	\$ 6	50
Regraduating Limb and Verniers of Transit,			"	12	00
Regraduating Vertical Circle and Vernier,			"	6	00
New Targets, complete, for New York or Philadelphia Rods,			"	5	00
Vernier Clamp, with screw and spring for Philadelphia Rods,			"	2	50
Clamp and Screw for New York Rods,			"	2	00
Bolts for tripod head, complete,			"		75
New Tripod Head, without bolts,			***	5	00
Wooden Cap for Tripod,					78
Chamois Skin, large size, best quality,					65
Gossamer Cover, for Transit Level,				1	00
Bottle of Watch Oil for lubricating centers,					2
Adjusting Pins of tempered steel,					10
The state of the s					-

The Vin & Stieren Company.

ARCHITECT'S AND DUMPY LEVELS

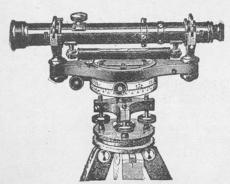


No. 6080.

6080. ARCHITECT'S Y LEVEL: Telescope 12 in.
long, 1½ in. objective with rack and pinion
movement, dust cap, sunshade and dust
guard, eyepiece with spiral motion focusing
arrangement, cross hairs; 4½ in. bubble to
telescope. The 8 in. horizontal limb rotates
independently, so that it can be readily set
to zero.* It is graduated to degrees, double
folded vernier reading to 5 min. Clamp and
tangent screws to level bar. Four leveling
screws.

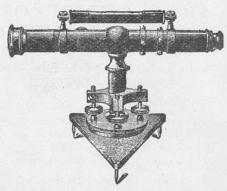
Instrument complete with trivet, (latter illustrated in fig. 6090) plumb bob and adjusting pins in polished case with tripod.

Each - - - - \$45.00



No. 6081.

6081. ARCHITECT'S Y LEVEL: same as 6080, but with Compass, graduations on silvered raised ring to degrees, needle 2¾ in. jeweled center and stop. Each - - - \$60.00

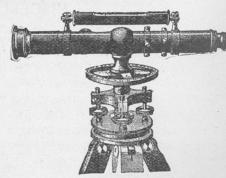


No. 6090

6090. DUMPY LEVEL: Telescope 12 in. long, 11/8 in objective with rack and pinion movement, dust cap, sunshade and dust guard; eyepiece with spiral motion focusing arrangement; cross hairs; 4½ in. bubble to telescope; long center to secure stability; clamp screw to center, four leveling screws.

Instrument complete with plumb bob, metal trivet and adjusting pins in polished case, with tripod.

Each - - - - \$35.00



No. 609

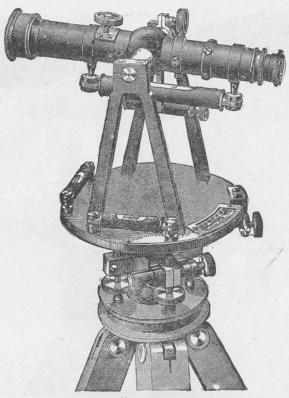
6091. DUMPY LEVEL: same as No. 6090, but with 3 in. horizontal circle, graduated to degrees, double folded vernier reading to 5 min. Horizontal limb rotates independently so that it may readily be set to zero.*

Each - - - - \$40.00

*In instruments Nos. 6030, 6081, 6091 the circle can be rotated independently to enable the operator to set it to zero with ease for each observation. It is not held in position by friction, as in some instruments of other makes, but by a spring concealed within the socket carrying the limb, so that it will never wear loose.



ARCHITECT'S TRANSITS



No. 6088.

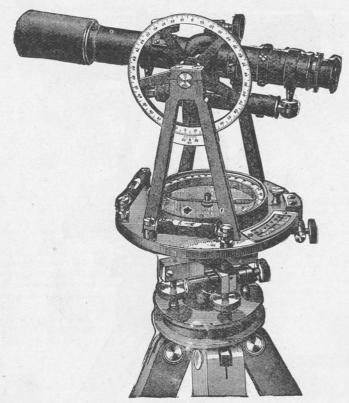
6088. ARCHITECT'S TRANSIT: Telescope $8\frac{1}{2}$ in., 1 in. objective with rack and pinion movement dust cap, sunshade and dust guard; eyepiece with spiral motion focusing arrangement, cross hairs, $8\frac{1}{4}$ in. sensitive bubble and clamp and tangent screws to telescope. Two plate bubbles; horizontal limb 5 in., graduated to half degrees, one double vernier reading to single minutes; clamp and tangent screws to inner and outer center. Four leveling screws, shifting center.

Instrument complete with plumb bob, magnifying glass and adjusting pins in polished case, with tripod. Each - - - \$85.00

6098. ARCHITECT'S TRANSIT: same as No. 6088, but with vertical circle $3\frac{1}{2}$ in. graduated to degrees, double folded vernier reading to 5 min.

Extension tripod in place of regular tripod. Extra - - \$6.0

PIONEER TRANSITS



No. 6095.

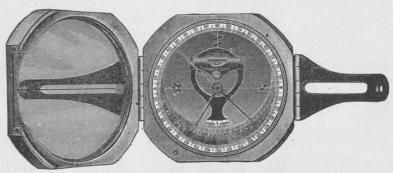
6095. PIONEER TRANSIT: Telescope 81 in., objective 1 in., with rack and pinion movement, dust cap, sunshade and dust guard; eyepiece with spiral motion focusing arrangement; cross and stadia hairs; 31/4 in. sensitive bubble and clamp and tangent screws to telescope; silvered compass box, graduations on raised ring to degrees, variation plate reading to 5 min.; needle 3 in., jeweled center and stop. Two plate bubbles. Horizontal limb 5 in., graduated to half degrees, one double vernier reading to single minutes. Clamp and tangent screws to inner and outer center; four leveling screws; shifting center.

Instrument complete with plumb bob, magnifying glass, adjusting pins, etc., in polished box with tripod. Each - - - \$100 00

6096. PIONEER TRANSIT: Same as No. 6095, but with vertical circle 31 in., graduated to degrees, double folded vernier reading to 5 min. \$110.00

\$6.00 Extension tripod in place of regular tripod. Extra - -

THE BRUNTON PATENT POCKET TRANSIT



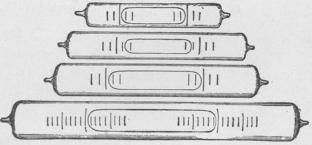
No. 6170.

A complete, accurate and reliable pocket instrument for taking the of top-graphy and preliminary surveys of every description, either on the surface or underground; thus taking the place of a sighting compass, clinometer, prismatic compass and Abney level, and combining them as it does in one light and handy instrument. The case is made of aluminum, $2\frac{3}{4} \times 2\frac{3}{4} \times 1$ inch. Weight of instrument about

8 ounces.

No. 6170. Brunton Patent Pocket Transit, with directions, . . . Each, \$25 00

SPIRIT LEVELS



	Length from tip		Mounted i same is fu	n tube, if irnished, Each.
No. 6180-1. 6180-2. 6180-3. 6180-4. 6180-5. 6180-6. 6180-7.	4.75 4.10 3.00 to 3.50 2.00 to 2.25	0.65 to 0.68, 0.58 to 0.60, 0.54 to 0.56, 0.50 to 0.53, 0.44 to 0.47.	for Y Level Telescopes, for Engineers' Transit Telescopes, for Mountain Transit Telescopes, for Light Mt. Transit Telescopes, for Engineers' Transit Plates, for Mountain Transit Plates, for Light Mountain Transit Plates,	\$4 00 3 00 2 50 2 00 1 00 1 00 1 00

Levels different in size from this list can be made to order only, and will be furnished only when order is accompanied with the tube or mounting for which one is intended, and also stating the kind of instrument it is for, and the degree of sensitiveness required. We will positively not make any levels upon written dimensions only, but require the tube to be sent in all cases, as otherwise we will not be responsible for any failure in that respect.