(1) பக்கங்களின் எண்ணிக்கை 22

(2) புதுக்கித் திருப்பிய நாள் 11.90

(3) ஆதாரங்குறிப்பவர் சுருக்கொப்பம் 1000

தமிழ்நாடு ஆவணக் காப்பகம்.

தமிழ்நாடு அரசு

P.W.D. துறை

அரசாணை எண். 1025
மு. கோப்புத் தாள் எண்.

அச்சகம்
பலவகை

நாள் : 13.4.1893

198

11

மடிக்கவோ கண்டபடி கையாளவோ கூடாது

ஆவண. கா-1—18,006—15-6-87.

1025/1

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

General.
Account.

READ—the following paper:—

From the Officer in charge, Mathematical Instrument Office, Calcutta, to the Secretary to the Government of Madras, Public Works Department, dated 27th March 1893, No. 1941.

There is at present a great demand for instruments of the kinds mentioned in the accompanying list, and, with a view to minimizing the indents for new instruments from England, I should be obliged if you would issue instructions to all officers under your control to examine their stock and return to this office any instruments of the kind mentioned which are not absolutely necessary in order that they may be repaired and issued again.

ORDER—dated 13th April 1893, No. 1025 W., Public Works.

Communicated to Superintending Engineers who will arrange to send to the Mathematical Instrument Department, Calcutta, surplus instruments of the kinds specified. They will see that credit is afforded to Provincial funds for the value of such instruments in accordance with para. 11, appendix N, of the Public Works Code.

(True Extract.)

Major, R.E.,
Under-Secy. to Govt., P.W.D.

To Superintending Engineers,
" the Consulting Architect,
" the Superintendent of Works, Periyár Project, } with lists.
" the Examiner, Public Works Accounts.
" the Officer in charge, Mathematical Instrument Office, Calcutta.

Exd. A. D. Xavier.
Spare Copies

GENERAL.
ACCOUNT.

Govt. of {1893} Madras.

PUBLIC WORKS.

Dated April, 13th.

Recd. *Encl.*

G.O., 13th April 1893, No. 1025 W.

APRIL.

Mathematical Instruments

Letter from the Officer in charge, Mathematical Instrument Office, Calcutta, requesting that — which are not absolutely necessary may be returned to him in view to their being repaired and issued again to meet the existing heavy demand, communicated to Superintending Engineers with instructions.

1025/2

List of Instruments generally kept in store, manufactured, or repaired at the Mathematical Instrument Office, Survey of India Department, Calcutta.

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.				Remarks.
		Rs. As.		Rs. As.	
Altazimuth Instruments, pocket	Each	From 80 0	to	125 0	
Anemographs	,,	,, 1,225 0	,,	1,570 0	
Anemometers, large, self-recording	,,	,, 400 0	,,	665 0	
,, Robinson's	,,	,, 50 0	,,	78 12	
,, Whewell's	,,	,, 150 0	,,	312 8	
Anemoscopes or Portable Wind Vanes	,,	,, 10 0	,,	36 12	
Angle Trisector	,,	,, 15 0	,,	.....	
Arithmometers, English, Edmondson's, circular form	,,	,, 420 0	,,	437 12	
,, French	,,	,, 235 0	,,	378 0	
Balance, Chemical	,,	,, 160 0	,,	214 0	
,, spring	,,	,, 4 0	,,	10 8	
Barometer Adjuncts, Wallis's	,,	,, 9 3	,,	.....	
Barometers, Aneroid, ordinary, 8″	,,	,, 78 12	,,	93 0	
,, ,, ,, 4½″, mountain, reading from 7,000 feet to 22,000 feet	,,	,, 45 0	,,	95 0	
,, ,, 3″ diameter, pocket size	,,	,, 40 0	,,	88 0	
,, ,, German (Hottinger's)	,,	,, 60 0	,,	120 0	
,, ,, Watkin's patent, reading from 5,000 to 20,000 feet	,,	,, 100 0	,,	278 0	
,, ,, self-recording, Adie's pattern	,,	,, 350 0	,,	420 0	
,, marine	,,	,, 50 0	,,	96 0	
,, mountain, Fortin's principle	,,	,, 90 0	,,	180 0	
,, ,, George's, pattern	,,	,, 100 0	,,	200 0	
,, ,, Macneill's, Boylean-Mariotti principle	,,	,, 150 0	,,	185 0	
,, standard, Fortin's	,,	,, 100 0	,,	250 0	
,, ,, Newman's	,,	,, 125 0	,,	200 0	
,, ,, self-compensating	,,	,, 105 0	,,	250 0	
Bars, lengthening, brass	,,	,, 0 4	,,	0 6	
,, ,, electrum	,,	,, 0 4	,,	0 6	
,, standard, steel, 6 feet long	Pairs	,, 30 0	,,	60 0	
,, wooden	Each	,, 6 0	,,	.....	
Boards, drawing, selected deal, fluted with ebony edges	according to sizes*	,, about 2 0	square foot		Sizes usually made— 32″ × 17″, 51″ × 25″, 42″ × 29″, 64″ × 35″, 70″ × 30″, 70″ × 65″
,, ,, mahogany & teak		,, ,, 2 4	do.		
,, ,, or sketching, Cavalry pattern	Each	,, 11 0	to	16 0	
,, ,, Captain Verner's pattern	,,	,, 26 0	,,	32 0	
,, padded for thermometers	,,	,, 2 8	,,	.....	
Calliper's Micrometers, parallel jaw, 4″ to 8″	,,	,, 100 0	,,	210 0	
,, ,, small	,,	,, 25 0	,,	.....	
Camera Lucida for sketching	,,	,, 25 0	,,	45 0	
Cards for prismatic compasses	,,	,, 2 10	,,	14 0	
,, ,, marine ,,	,,	,, 24 0	,,	65 10	
Cases, leather, sketching	,,	,, 5 0	,,	12 0	
Cathetometers	,,	,, 315 0	,,	367 8	
Chains, iron, measuring, best, 3 sawn oval links, 30 feet	,,	,, 2 0	,,	4 0	Chains, brass, are about treble the price of iron.
,, ,, ,, ,, ,, ,, 33 ,,	,,	,, 2 0	,,	4 4	
,, ,, ,, ,, ,, ,, 50 ,,	,,	,, 2 4	,,	5 8	
,, ,, ,, ,, ,, ,, 66 ,,	,,	,, 2 8	,,	7 8	
,, ,, ,, ,, ,, ,, 100 ,,	,,	,, 4 8	,,	9 0	
,, steel, 30 feet	,,	,, 3 0	,,	6 0	
,, ,, 33 ,,	,,	,, 3 8	,,	6 8	
,, ,, 50 ,,	,,	,, 5 0	,,	7 8	
,, ,, 66 ,,	,,	,, 7 0	,,	10 0	
,, ,, 100 ,,	,,	,, 8 8	,,	13 0	
Chain handles	Per pair	,, 0 12	,,	.....	
,, numbers, brass, sets	Each	,, 1 0	,,	.....	
,, ,, iron, ,,	,,	,, 0 6	,,	.....	
,, pins, sets of 10	,,	,, 0 12	,,	.....	
Chairs, transit observing	,,	,, 45 0	,,	.....	
Chartometers	,,	,, 7 8	,,	30 0	
Chronographs, common pattern	,,	,, 30 0	,,	42 0	
,, watch pattern	,,	,, 45 0	,,	85 0	
,, with watch combined, keyless action, white metal. The long second hand will record, on the dial, the interval between two events without stopping the movement of the watch	,,	,, 100 0	,,	125 0	

* Sizes to be stated on face of indents.

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Chronometer Box, mean and sidereal time in outer padded case -	Each	From 250 0 to	680 0	
„ pocket, gold and silver -	„	„ 200 0 „	600 0	
Chronomicrometers, a very superior form of chronograph and time-keeper with A. or B. kew certificate -	„	„ 275 0 „	320 0	
Circles, calculating, Boucher's, watch size - -	„	„ 24 0 „	.....	
„ reflecting, by Troughton and Simms - -	„	„ 500 0 „	.....	
„ repeating, astronomical - - -	„	„ 1,250 0 „	.....	
Circumferenters with rack adjustments, divided cover, vernier reading to 3 minutes, cross levels, folding sights, ball and socket joint and stand - -	„	„ 183 12 „	.....	
Clinometers, common, rule form - - -	„	„ 10 0 „	35 0	
„ Gun, Watkin's - - -	„	„ 50 0 „	.....	
„ Road, reflecting, Cooke's pattern -	„	„ 45 0 „	55 0	
„ Watkin's pattern - - -	„	„ 15 0 „	20 0	
„ Survey pattern - - -	„	„ 25 0 „	35 0	
„ wooden, with paper scales of angles, shades, &c. -	„	„ 1 8 „	2 0	
Clocks, astronomical - - - -	„	„ 700 0 „	1,225 0	
„ common, office - - - -	„	„ 25 0 „	.....	
„ tide-gauge - - - -	„	„ 260 0 „	.....	
Combs, acre, card board - - -	„	„ 0 4 „	0 6	16″ & 32″ = 1 Mile.
„ „ metal, in case - - -	„	„ 10 0 „	15 0	
Cords for Range-finders - - -	„	„ 2 14 „	.....	
Compasses, beam, wooden bar, plain, from 1½′ to 4′ -	„	„ 10 0 „	20 0	
„ „ with adjustment, with or without scale	„	„ 20 0 „	45 0	
„ „ sliding, tubular, 2′ to 4′ - -	„	„ 25 0 „	30 0	
„ „ with adjustment, telescopic, electrum, in case -	„	„ 27 8 „	32 0	
„ „ portable, to fit a rule or lath, in box -	„	„ 10 0 „	17 0	
„ bow, ink, pencil, or dividers, brass, single jointed-	„	„ 2 8 „	4 0	
„ „ „ „ „ double jointed-	„	„ 3 0 „	5 0	
„ „ „ „ electrum, single „ -	„	„ 3 4 „	5 8	
„ „ „ „ double „ -	„	„ 4 0 „	6 0	
„ „ „ brass or electrum, double jointed with needle points -	„	„ 5 0 „	7 0	
„ „ „ „ spring, bow, ink, pencil, or dividers -	„	„ 2 8 „	4 0	
„ „ „ „ sets, in case -	„	„ 7 0 „	12 0	
„ drawing, ordinary, brass, 5″ - -	„	„ 1 0 „	2 0	
„ „ „ 6″ - -	„	„ 1 4 „	2 8	
„ „ „ electrum 5″ - -	„	„ 1 4 „	2 8	
„ „ „ „ 6″ - -	„	„ 1 12 „	3 0	
„ „ hair spring, brass - -	„	„ 3 8 „	4 8	
„ „ „ „ electrum - -	„	„ 4 0 „	5 4	
„ „ with pen & pencil points & lengthening bar (half set), brass-	„	„ 8 0 „	11 0	
„ „ „ „ electrum-	„	„ 10 0 „	15 0	
„ „ (half sets) with one knee joint to compass, brass-	„	„ 10 0 „	12 0	
„ „ „ „ „ electrum-	„	„ 12 0 „	16 0	
„ „ „ with double knee joint to compass, brass-	„	„ 12 0 „	14 0	
„ „ „ „ „ electrum-	„	„ 14 0 „	18 0	
„ „ „ „ joints to compass and points to hold needles, brass -	„	„ 14 0 „	18 0	
„ „ „ „ electrum-	„	„ 16 0 „	20 0	
„ magnetic, pocket, in metal case, with floating card or with needle -	„	„ 4 0 „	12 0	
„ „ „ in wooden case „ „ -	„	„ 2 0 „	8 0	
„ „ „ watch pattern in electrum case with Singer's dial divided to single degrees-	„	„ 15 0 „	20 0	
„ „ „ watch pattern in electrum case with Singer's dial divided to 5 degrees spaces for non-commissioned officers -	„	„ 6 0 „	10 0	
„ „ „ (Captain Verner's) patent bronze brass box, alluminium dial painted with luminous paint in solid leather case with loop for belt and button strap -	„	„ 39 5 „	.....	

1625/3

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Compasses, magnetic or rectangular, for plane-tables, in boxes 2½″ -	Each	From 4 0 to	6 0	
„ „ „ „ „ 3″ -	„	„ 6 0 „	8 0	
„ „ „ „ „ 4″ -	„	„ 8 0 „	10 0	
„ „ „ „ „ 5″ -	„	„ 10 0 „	12 0	
„ „ „ „ „ 6″ -	„	„ 12 0 „	14 0	
„ marine - - - -	„	„ 20 0 „	50 0	
„ Napier's, electrum, in case - -	„	„ 10 0 „	28 14	
„ pillar, electrum, in case - -	„	„ 10 0 „	35 0	
„ prismatic, card dial, 2″ & 2½″, without glass shades or stands -	„	„ 25 0 „	37 0	
„ „ „ 3″, with stand -	„	„ 40 0 „	55 0	
„ „ „ 3½″ „ „ -	„	„ 45 0 „	60 0	
„ „ „ silver ring, 2″ & 2½″, without glass shades or stands -	„	„ 35 0 „	47 0	
„ „ „ 3″, with shades, &c., with stands-	„	„ 50 0 „	75 0	
„ „ „ silver ring, 3½″, with shades, &c., with stand -	„	„ 55 0 „	80 0	
„ „ „ 4″ „ -	„	„ 60 0 „	85 0	
„ „ „ 4½″ „ -	„	„ 65 0 „	95 0	
„ „ „ 5″ „ -	„	„ 80 0 „	110 0	
„ „ „ 6″ „ -	„	„ 100 0 „	130 0	
„ „ Hunter's pattern with card -	„	„ 30 0 „	35 0	
„ „ „ „ with silver ring-	„	„ 45 0 „	70 0	
„ „ „ „ with Singer's dial-	„	„ 30 0 „	55 0	
„ „ Hutchinson's pattern -	„	„ 30 0 „	50 0	
„ „ „ „ with stand -	„	„ 35 0 „	75 0	
„ „ „ telescopic - - -	„	„ 150 0 „	250 0	
„ proportional, 6″, brass, plain - -	„	„ 5 0 „	10 0	
„ „ 6″ „ divided - -	„	„ 10 0 „	17 8	
„ „ 6″ electrum, plain - -	„	„ 7 0 „	10 8	
„ „ 6″ „ divided - -	„	„ 10 0 „	18 6	
„ „ 9″ brass, divided - -	„	„ 16 0 „	26 0	
„ „ 9″ „ „ with adjustment-	„	„ 25 0 „	45 8	
„ subtense, with micrometer telescope, with stand for use in exploratory expeditions for obtaining linear distances, in conjunction with a graduated staff, without actual measurements - - -	„	„ 200 0 „	525 0	

N.B.—The lower priced instruments are of simpler construction with parallel plates & round stand.

surveying, Bengalee, English make, with stand	„	„ 50 0 „	90 0	
„ „ „ M. I. O. pattern, with stand -	„	„ 15 0 „	20 0	
„ English, with stand - -	„	„ 40 0 „	80 0	
„ triangular, in case - - -	„	„ 7 8 „	12 8	
„ tubular, with plain steel points -	„	„ 25 4 „	.....	
„ „ needle points - -	„	„ 29 12 „	.....	
„ weather, Klinkerfue's - -	„	„ 49 10 „	.....	
„ wholes and halves, metal - -	„	„ 12 0 „	16 8	
Curves, French, small sets, pear-wood, in box -	„	„ 3 8 „	4 8	
„ „ large „ „ „ „ -	„	„ 6 8 „	8 0	
„ „ small sets, ebonite - -	„	„ 16 0 „	20 0	
„ „ single, ebonite - - -	„	„ 0 8 „	1 8	
„ „ „ pear-wood - - -	„	„ 0 4 „	0 8	
„ „ „ horn - - -	„	„ 0 6 „	0 12	
„ Railway, small sets of 50 from 1½ inches to 120 inches radius, in case, card board -	„	„ 8 0 „	10 2	
„ „ „ „ „ ebonite-	„	„ 35 0 „	48 0	
„ „ „ „ „ pear-wood -	„	„ 15 0 „	21 0	
„ „ large sets of 100 from 1½ inches to 240 inches radius, in case, card board -	„	„ 15 0 „	25 0	
„ „ „ „ „ ebonite-	„	„ 55 0 „	80 0	
„ „ „ „ „ pear-wood-	„	„ 25 0 „	40 0	
„ „ „ „ - - -	„	„ 210 0 „	.....	
Curve, Ranger's, Dalrymple Hay's -				
Declinometers, for ascertaining the dip or inclination of strata, hills, &c., in wooden case with card dail - -	„	„ 3 0 „	8 0	
„ „ „ in metal case				
„ „ „ with silvered metal dial-	„	„ 10 0 „	25 0	

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Dials, Miner's, Headley's, with telescope and stand -	Each	From 288 0 to	.....	
" " Lean's, with vertical arc, telescope, plain sights, levels, rack motion, &c., with jointed legs-	"	" 150 0 "	315 0	
Dip Circles, kew pattern - - -	"	" 700 0 "	.....	
Dynameters, for testing the magnifying power of telescopes -	"	" 50 0 "	.....	
Eidographs, 2½ feet, with fittings, in box - -	"	" 130 0 "	195 0	
" 3 " " " " - -	"	" 175 0 "	245 0	
" 3½ " " " " - -	"	" 200 0 "	280 0	
Engine Counter's, Harding's, large, to count to ten millions with reciprocating motion, and arranged so as readily to set back to zero -	"	" 90 0 "	.....	
" " " small, pocket size (or Speedometers), nickel-plated, with 4 figures and steel friction bits, in case -	"	" 34 0 "	.....	
Glasses, binocular, small, in sling case - -	"	" 30 0 "	55 0	
" " large, " " - -	"	" 40 0 "	125 0	
" " medium, with hinges or adjusting centres -	"	" 50 0 "	70 0	
" " telescope, with rack-work or adjusting screw for moving both eye-pieces at one time to adjust for perfect vision - -	"	" 147 0 "	188 12	
" copying or tracing, English plate, rising frame with covering lid, size 23" × 16" -	"	" 22 0 "	27 0	
" " " " " 31" × 23" -	"	" 35 0 "	42 0	
" " " " " 42" × 29" -	"	" 50 0 "	60 0	
" magnifying, folding (or Lenses, reading), in horn cases, ½" to 2" -	"	" 0 14 "	6 12	
" " " " improved -	"	" 13 0 "	.....	
" " Watchmaker's - -	"	" 4 0 "	6 0	
" reading, hand, in electrum frames with ebony handles, 2" -	"	" 2 0 "	.....	
" " " " " " 2½" -	"	" 2 10 "	.....	
" " " " " " 3" -	"	" 3 8 "	.....	
" " " " " " 3½" -	"	" 4 0 "	.....	
" " " " " " 4" -	"	" 5 0 "	.....	
" time, in plain wooden frames " " 4½" -	"	" 6 8 "	.....	
" " " " brass " " - -	"	" 8 0 "	.....	
Heliographs, with stands, Military, English, 5" and 6" -	"	" 1 4 "	3 8	
Heliotropes, with sight vane in box with stand, 4" -	"	" 4 0 "	18 0	
" " " " " " 6" -	"	" 150 0 "	220 8	
" " " " " " 9" -	"	" 28 0 "	50 0	
" " " " " " 12" -	"	" 42 0 "	75 0	
Holdalls, leather, folding, generally containing 1 Compass hair divider, 5"; 1 Protractor, ivory or metal; 1 Pen, drawing, ivory handle; 1 Knife, pocket; 1 Ink eraser; 1 Lead-pencil 1 Penholder with spare nibs; 1 Bottle, Exciseman's-	"	" 63 0 "	112 0	
	"	" 84 0 "	150 0	
Horizons, artificial, dark glass, with cross levels and adjusting screws, in box -	"	" 16 0 "	25 0	
" " mercurial, with trough and mercury bottle, in box -	"	" 20 0 "	32 0	
" " Captain George's pattern -	"	" 40 0 "	78 0	
Hydrometers, Sike's, with brass float strongly gilt, ivory scale thermometer, comparative rule, book of tables, and trial glass, complete -	"	" 45 0 "	90 0	
" Sike's as above, but fitted with Hick's patent Fan-weight -	"	" 40 0 "	55 4	
" Sike's, glass, in sets of five, with thermometer in box complete -	"	" 59 8 "	.....	
" Stevenson's, brass, strongly gilt, as used by the Board of Revenue, with thermometer in box complete-	"	" 24 8 "	71 12	
" " glass, divided from W. to 20 above proof, with thermometer in box complete-	"	" 30 0 "	40 0	
	"	" 30 0 "	35 0	

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Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Hydrometers, Stevenson's, ordinary, without case -	Each	From 5 12 to	6 4	
" " glass floats, ordinary, without case, with thermometer and test glass -	"	" 5 12 "	6 4	
Hygrometers, Daniel's - - -	"	" 40 0 "	48 0	
" Mason's, with porcelain scale, in japanned metal case - -	"	" 13 8 "	.....	
" " on mahogany board with thermometers divided on stem and figured on the scales -	"	" 25 0 "	32 12	
" Regnault's - - -	"	" 32 0 "	65 0	
Hypsometers, or Boiling Point Thermometers, Henderson's pattern - - - -	"	" 55 0 "	.....	
" Wollaston's, large size, with spare thermometers, in leather case - -	"	" 60 0 "	84 0	
Spare Thermometers for Hypsometers - -	"	" 17 8 "	26 0	
Instruments, drawing, mathematical, brass, 1st sort, in box	"	" 40 0 "	55 0	
" " " " 2nd " "	"	" 25 0 "	42 0	
" " " " 3rd " "	"	" 13 0 "	20 0	
" " " electrum, 1st sort, with needle points-	"	" 70 0 "	95 0	
" " " " " without needle points-	"	" 60 0 "	85 0	
" " " " 2nd sort -	"	" 30 0 "	48 0	
" " " " 3rd sort -	"	" 16 0 "	25 0	
" " " Addiscombe pattern, in 13" mahogany case, brass -	"	" 35 0 "	43 12	
" " " " electrum -	"	" 40 0 "	52 8	
" " " pocket, in fish-skin or morocco case -	"	" 12 0 "	43 12	
Knives for Instrument boxes - - -	"	" 0 10 "	.....	
Lamps, Argand, with parabolic reflectors - -	"	" 75 0 "	125 0	
" Miner's, with stand - - -	"	" 45 10 "	.....	
" signalling, Begbie's - - -	"	" 36 0 "	40 0	
" bull's-eye - - - -	"	" 3 8 "	7 7	
" referring - - - -	"	" 3 0 "	8 12	
Lenses, reading (see Glasses, magnifying).				
Levels, drainage, with telescope, tripod stand, and station staff, complete - - -	"	" 96 0 "	.....	
" dumpy, ordinary, 3 screw pattern, with round tripod stand, 10" -	"	" 140 0 "	200 0	
" " " " " " 12" -	"	" 168 0 "	240 0	
" " " " " " 14" -	"	" 190 0 "	270 0	
" " " " " " 20" -	"	" 270 0 "	350 0	
" " 4 screw pattern, with parallel plates and round tripod stand - -	"	" 100 0 "	200 0	
" " Cook's patent, reversible, with brace tripod stand, 10" -	"	" 175 0 "	218 0	
" " " " " " 12" -	"	" 220 0 "	258 0	
" " " " " " 14" -	"	" 250 0 "	297 0	
" " " " " " 16" -	"	" 280 0 "	310 0	
" " " " " " 18" -	"	" 300 0 "	325 0	
" " " " " " 20" -	"	" 315 0 "	340 0	
" " Cushing's, reversible, same sizes and prices as above.				
" " standard, 20", by Troughton and Simms, with rigid braced stand -	"	" 300 0 "	350 0	
" Engineer's, 9", with stand - - -	"	" 120 0 "	145 0	
" Field Service, teak-wood - - -	"	" 20 0 "	30 0	
" reflecting, Abney's - - -	"	" 25 0 "	38 0	
" " clinometer - - -	"	" 17 0 "	22 0	
" spirit, metal, in case, 4" - - -	"	" 4 0 "	7 12	
" " " " 6" - - -	"	" 6 0 "	10 12	
" " " " 8" - - -	"	" 8 0 "	14 0	
" " " " 10" - - -	"	" 12 0 "	17 8	
" " " " 12" - - -	"	" 15 0 "	24 0	
" " " in mahogany block with brass plate, 4" -	"	" 1 8 "	2 0	
" " " " " 6" -	"	" 2 0 "	5 4	
" " " " " 8" -	"	" 3 8 "	4 4	
" " " " " 10" -	"	" 3 8 "	6 9	
" " " " " 12" -	"	" 5 0 "	8 0	

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Levels, spirit, with sights and graduated arc for determining inclinations	Each	From 25 0 to	48 0	
„ water	„	„ 3 0 „	7 0	
„ Y, with tripod stand, 10″	„	„ 180 0 „	240 0	
„ „ „ „ 12″	„	„ 220 0 „	280 0	
„ „ „ „ 14″	„	„ 260 0 „	325 0	
„ „ „ „ 20″	„	„ 290 0 „	360 0	
Line Dividers, electrum, Colonel Beavan's	„	„ 15 0 „	35 0	
Logs, Massey's patent, frictionless propeller	„	„ 40 0 „	66 14	
Machines, enumerating	„	„ 20 0 „	65 0	
Magnetometer, kew pattern, by Barrow, for measuring the earth's horizontal magnetic force, and also the declination of the magnetic pole	„	„ 1,000 0 „	.....	
Magnets, bar, in boxes, per pair, 6″	„	„ 2 0 „	7 8	
„ „ „ „ 7″	„	„ 3 0 „	10 0	
„ „ „ „ 8″	„	„ 3 8 „	10 0	
„ horse-shoe, from 1″ to 10″ in length	„	„ 0 8 „	4 8	
Map-printing Machines, Gastrell's pattern	„	„ 50 0 „	70 0	
„ „ Ordnance pattern, in box	„	„ 40 0 „	70 0	
Meters, air, Casella's, for Mines, Hospitals, and other Public Buildings	„	„ 50 0 „	73 0	
„ current, for ascertaining the tidal rate or flow of streams or rivers in miles, furlongs, and feet-	„	„ 60 0 „	128 0	
„ current, Moore's, by Troughton and Simms	„	„ 150 0 „	180 0	
Microscopes, Monocular and Binocular	„	„ 50 0 „	676 6	
Omnimeters, Eckhold's, 5″	„	„ 500 0 „	700 0	
„ „ 6″	„	„ 550 0 „	770 0	
Omni-Telemeters, Dredge-Steward. Intended for the measurement of distances for military purposes	„	„ 220 8 „	.....	
Opisometers, or Map Meters, for measuring curved lines on Plans, Charts, &c	„	„ 2 8 „	15 12	
Ozonometers	„	„ 18 12 „	.....	
Pedometers, in electrum case	„	„ 16 0 „	37 0	
Passometers, in silver case with crystal glass	„	„ 60 0 „	75 0	
Pens, bordering, ivory handle	„	„ 3 8 „	4 4	
„ drawing	„	„ 1 0 „	2 0	
„ „ „ „ turn-up-nib	„	„ 1 12 „	3 8	
„ „ with extra strong back, nib, and square ivory handle	„	„ 3 8 „	4 12	
„ „ steel handle	„	„ 1 0 „	1 8	
„ dotting, ivory handle, with set of four wheels	„	„ 4 0 „	6 0	
„ double or road, ivory handle	„	„ 3 0 „	6 0	
„ „ „ steel „	„	„ 2 0 „	4 0	
Pentagraphs, English, Stanley's, tubular construction, in mahogany case, 18″	„	„ 90 0 „	105 0	
„ „ „ „ „ „ 24″	„	„ 100 0 „	114 0	
„ „ „ „ „ „ 30″	„	„ 115 0 „	142 0	
„ „ „ „ „ „ 36″	„	„ 130 0 „	166 0	
„ „ „ „ „ „ 42″	„	„ 150 0 „	182 0	
„ „ ordinary, from 2 feet to 4 feet, in boxes, about 35 to 40 Rupees per foot according to condition				
„ French, in box	„	„ 70 0 „	155 0	
Perambulators, English pattern, light	„	„ 150 0 „	270 0	
„ Waugh's pattern, heavy	„	„ 110 0 „	220 0	
„ Madras pattern, with wheel 20 feet in circumference	„	„ 120 0 „	165 0	
Pins for maps, brass	„	„ 100 0 „	200 0	
„ „ electrum	Per doz.	„ 0 12 „	1 2	
„ chains, iron, light	„	„ 0 14 „	1 4	
„ „ steel „	Each	„ 0 1 „	.....	
„ „ iron, thick, Revenue Survey pattern	„	„ 0 2 „	.....	
Plane-tables, deal, with brass plate and clamping screw, with stand, Survey pattern, 30″ × 24″	„	„ 0 4 „	.....	
„ „ „ „ „ 24″ × 20″	„	„ 14 0 „	16 0	
„ teak, same sizes and prices as above.	„	„ 13 0 „	15 0	
„ with braced stand				
„ deal or teak, light, military pattern, 22″ × 18″ with folding stand	„	„ 20 0	extra.	
Planimeters, Amsler's, for computing areas, brass, in case	„	„ 24 0 „	26 0	
„ „ „ „ electrum	„	„ 30 0 „	45 0	
Plates, graticule	„	„ 45 0 „	55 0	
	„	„ 25 0 „	50 0	

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Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Pluviometers (Rain-gauges), Glaisher's	Each	From 37 8 to	52 8	
„ Symon's pattern, complete, with bottle and measuring glass	„	„ 12 0 „	16 0	
„ self-registering, Crossley's	„	„ 60 0 „	78 0	
„ self-recording, Casella's, improved, showing the amount of rainfall in hundredths of an inch on a dial	„	„ 110 0 „	.....	
Pointers, Station, 6″ circle, divided on brass to 30 minutes, with verniers to read 1 minute and tangent screw motion	„	„ 90 0 „	132 0	
„ „ 3″ circle, divided on silver, with verniers to read to 1 minute and tangent screw motion	„	„ 130 0 „	157 8	
„ „ 6″ circle, divided on silver, with verniers, &c., and lengthening arms	„	„ 150 0 „	230 0	
„ „ 8″ circle, divided on silver, &c.	„	„ 200 0 „	275 0	
Prickers	„	„ 1 0 „	1 12	
Protractors, plain, circular, Cooke's gun-metal or brass, in case, 6″	„	„ 15 0 „	28 0	
„ „ „ „ „ „ 7″	„	„ 20 0 „	32 8	
„ „ „ „ „ „ 8″	„	„ 25 0 „	37 8	
„ „ „ „ „ „ 9″	„	„ 28 0 „	43 0	
„ „ „ „ „ „ 12″	„	„ 40 0 „	56 12	
„ „ „ „ electrum „ 6″	„	„ 17 8 „	30 10	
„ „ „ „ „ 7″	„	„ 25 0 „	35 0	
„ „ „ „ „ 8″	„	„ 32 0 „	40 0	
„ „ „ „ „ 9″	„	„ 35 0 „	44 10	
„ „ „ „ „ 12″	„	„ 45 0 „	61 4	
„ „ semi-circular, brass, 6″	„	„ 12 0 „	22 0	
„ „ „ electrum, 6″	„	„ 15 0 „	27 0	
„ „ „ horn, 6″	„	„ 0 8 „	0 12	
„ circular, with arm and vernier, in case, brass, 6″	„	„ 25 0 „	40 0	
„ „ „ „ electrum, 6″	„	„ 35 0 „	50 0	
„ „ best, with folding arms, clamp, and tangent screws, two verniers divided on silver, in case, brass, 6″	„	„ 50 0 „	85 0	
„ „ „ „ electrum	„	„ 65 0 „	110 0	
„ „ card board, 5″ (figures in English and Vernacular)	„	„ 0 4 „	.....	
„ „ „ 9″	„	„ 0 12 „	.....	
„ „ „ 12″	„	„ 1 4 „	.....	
„ semi-circular, with arm and vernier, in case, brass, 6″	„	„ 20 0 „	37 0	
„ „ „ „ electrum, 6″	„	„ 30 0 „	45 0	
„ „ „ Cooke's gun-metal, 12″	„	„ 60 0 „	79 0	
„ rectangular, brass, 6″	„	„ 8 0 „	14 0	
„ „ electrum, 6″	„	„ 10 0 „	15 12	
„ „ ivory, 6″	„	„ 2 8 „	4 6	
„ „ „ 12″	„	„ 10 0 „	28 0	
„ „ box-wood, 6	„	„ 0 14 „	2 0	
„ „ Gale and Polden's, 6″	„	„ 2 1 „	.....	
„ „ Sandhurst pattern, with plummet, in leather case	„	„ 4 0 „	6 9	
Pyrometer, Gauntlett's	„	„ 40 0 „	73 0	
Quadrants, Gunner's, metal rule form	„	„ 25 0 „	30 0	
Rain-gauges (see Pluviometers).				
Range-finders, Bate's, binocular form	„	„ 200 0 „	.....	
„ Bolton's	„	„ 400 0 „	700 0	
„ Labbez, pocket	„	„ 55 2 „	.....	
„ „ telescopic	„	„ 73 8 „	96 4	
„ Watkin's, large and small size	„	„ 175 0 „	240 0	
Rods, measuring, wooden, in links or feet	„	„ 2 0 „	4 0	
Rules, Carpenter's, box-wood, 1 foot 4 fold	„	„ 1 0 „	2 8	
„ „ „ 2 feet 2 „	„	„ 1 8 „	3 0	
„ „ „ 2 „ 4 „	„	„ 2 0 „	5 0	
„ „ „	„	„ 0 6 „	0 8	
„ flat, plain, ebonite, 6″	„	„ 0 12 „	0 14	
„ „ „ 12″	„	„ 1 12 „	2 0	
„ „ „ 24″	„	„ 2 0 „	2 10	
„ „ „ 30″	„	„ 2 8 „	3 0	
„ „ „ 36″	„	„ 3 0 „	3 8	
„ „ „ 42″	„	„ 0 2 „	0 3	
„ „ wooden, 6″	„	„		

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Rules, flat, plain, wooden, 12″	Each	From 0 4 to	0 6	
,, ,, ,, 24″	,,	,, 0 12 ,,	1 0	
,, ,, ,, 30″	,,	,, 0 14 ,,	1 4	
,, ,, ,, 36″	,,	,, 1 2 ,,	1 8	
,, ,, ,, 48″	,,	,, 2 4 ,,	2 8	
,, folding, ivory, 1 foot 4 fold	,,	,, 8 0 ,,	13 0	
,, ,, 2 feet 2 ,,	,,	,, 10 0 ,,	15 0	
,, ,, 2 ,, 4 ,,	,,	,, 10 0 ,,	18 0	
,, ,, 2 ,, 4 ,, 1¼″ wide with double levels (Engineer's pocket rule)	,,	,, 15 0 ,,	23 0	
,, parallel bar, ivory, 6″	,,	,, 2 8 ,,	3 8	
,, ,, ,, wooden 6″	,,	,, 0 8 ,,	1 0	
,, ,, ,, ,, 9″	,,	,, 0 12 ,,	1 4	
,, ,, ,, ,, 12″	,,	,, 1 6 ,,	2 8	
,, ,, ,, ,, 15″	,,	,, 2 0 ,,	3 0	
,, ,, ,, ,, 18″	,,	,, 3 4 ,,	3 12	
,, ,, ,, ,, 24″	,,	,, 4 8 ,,	5 0	
,, ,, on rollers, brass or Cooke's gun-metal, in case, 6″	,,	,, 6 0 ,,	12 4	
,, ,, ,, ,, ,, ,, 9″	,,	,, 10 0 ,,	19 4	
,, ,, ,, ,, ,, ,, 12″	,,	,, 14 0 ,,	26 4	
,, ,, ,, ,, ,, ,, 18″	,,	,, 18 0 ,,	39 6	
,, ,, ,, ,, ,, ,, 24″	,,	,, 25 0 ,,	52 8	
,, ,, ,, ,, ,, ,, 36″	,,	,, 35 0 ,,	66 8	
,, ,, ,, ,, ,, ,, 42″	,,	,, 50 0 ,,	97 2	
,, ,, ,, ,, electrum, in case, 6″	,,	,, 7 0 ,,	13 2	
,, ,, ,, ,, ,, ,, 9″	,,	,, 12 0 ,,	19 11	
,, ,, ,, ,, ,, ,, 12″	,,	,, 18 0 ,,	30 10	
,, ,, ,, ,, ,, ,, 18″	,,	,, 25 0 ,,	49 14	
,, ,, ,, ,, ,, ,, 24″	,,	,, 35 0 ,,	65 10	
,, ,, ,, ,, ,, ,, 36″	,,	,, 47 0 ,,	91 14	
,, ,, ,, ,, ,, ,, 42″	,,	,, 65 0 ,,	107 3	
,, ,, wooden, on brass rollers, 6″	,,	,, 3 0 ,,	5 8	
,, ,, ,, ,, ,, 9″	,,	,, 4 0 ,,	6 2	
,, ,, ,, ,, ,, 12″	,,	,, 6 0 ,,	8 12	
,, ,, ,, ,, ,, 15″	,,	,, 7 0 ,,	10 8	
,, ,, ,, ,, ,, 18″	,,	,, 9 0 ,,	12 4	
,, ,, ,, ,, ,, 24″	,,	,, 12 0 ,,	15 12	
,, ,, ,, ,, ,, ,, with ivory edges, 12″	,,	,, 12 0 ,,	14 0	
,, ,, Captain Field's ,, ,, ,, 18″	,,	,, 18 0 ,,	22 12	
,, sight, for plane-tables, brass, with fixed sights, 18″	,,	,, 35 0 ,,	56 12	
,, ,, ,, ,, ,, ,, ,, 24″	,,	,, 8 0 ,,	10 0	
,, ,, ,, ,, ,, ,, ,, 30″	,,	,, 12 0 ,,	16 0	
,, ,, ,, ,, ,, folding ,, 18″	,,	,, 15 0 ,,	20 0	
,, ,, ,, ,, ,, ,, ,, 24″	,,	,, 10 0 ,,	12 0	
,, ,, ,, ,, ,, ,, ,, 30″	,,	,, 14 0 ,,	18 0	
,, ,, ,, wooden with fixed metal sights, 18″	,,	,, 17 0 ,,	22 0	
,, ,, ,, ,, ,, ,, ,, 24″	,,	,, 2 8 ,,	3 0	
,, ,, ,, ,, ,, ,, ,, 30″	,,	,, 3 0 ,,	3 8	
,, ,, ,, ,, ,, folding ,, 18″	,,	,, 3 0 ,,	4 0	
,, ,, ,, ,, ,, ,, ,, 24″	,,	,, 8 0 ,,	10 0	
,, ,, ,, ,, ,, ,, ,, 30″	,,	,, 11 0 ,,	13 0	
,, ,, ,, ,, ,, telescopic attachment -	,,	,, 14 0 ,,	16 0	
,, straight edges, electrum or crown metal, 12″, in case	,,	,, 30 0 ,,	35 0	
,, ,, ,, ,, ,, ,, 18″ ,,	,,	,, 6 0 ,,	10 8	
,, ,, ,, ,, ,, ,, 24″ ,,	,,	,, 10 0 ,,	15 12	
,, ,, ,, ,, ,, ,, 30″ ,,	,,	,, 15 0 ,,	21 14	
,, ,, ,, ,, ,, ,, 36″ ,,	,,	,, 20 0 ,,	26 4	
,, ,, ,, ,, ,, ,, 42″ ,,	,,	,, 23 0 ,,	30 10	
,, ,, ,, ,, ,, ,, 48″ ,,	,,	,, 28 0 ,,	35 0	
,, ,, ,, ,, ,, ,, 54″ ,,	,,	,, 30 0 ,,	46 0	
,, ,, ,, ,, ,, ,, 60″ ,,	,,	,, 35 0 ,,	52 0	
,, ,, ,, ,, ,, ,, 66″ ,,	,,	,, 40 0 ,,	60 8	
,, ,, ,, ,, ,, ,, 72″ ,,	,,	,, 45 0 ,,	65 0	
,, ,, ,, ,, steel 12″ ,,	,,	,, 50 0 ,,	70 0	
,, ,, ,, ,, ,, 18″ ,,	,,	,, 3 0 ,,	5 8	
,, ,, ,, ,, ,, 24″ ,,	,,	,, 5 0 ,,	9 8	
,, ,, ,, ,, ,, 30″ ,,	,,	,, 7 0 ,,	12 0	
,, ,, ,, ,, ,, 36″ ,,	,,	,, 9 0 ,,	17 8	
	,,	,, 10 0 ,,	23 0	

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Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Rules, straight edges, steel, 42″ in case	Each	From 13 0 to	32 13	
,, ,, ,, ,, 48″ ,,	,,	,, 15 0 ,,	35 0	
,, ,, ,, ,, 60″ ,,	,,	,, 17 0 ,,	44 0	
,, ,, ,, ,, 72″ ,,	,,	,, 20 0 ,,	52 0	
Salinometers, glass, with jar for ascertaining the density of salt water	,,	,, 8 0 ,,	12 0	
Scales, acre, computing, 16″ = 1 Mile	,,	,, 14 0 ,,	24 0	
,, architect's, box-wood, sets, in box containing six scales divided on the two edges to read $\frac{1}{16}$″ and $\frac{1}{8}$″, $\frac{3}{16}$″ and $\frac{1}{4}$″, $\frac{3}{8}$″ and $\frac{3}{4}$″, $\frac{1}{10}$″ and $\frac{1}{5}$″, $\frac{1}{2}$″ and 1″, 1½″ and 3″	,,	,, 10 0 ,,	32 0	
,, architect's, box-wood, single, divided on edges to any of above scales	,,	,, 1 8 ,,	3 0	
,, architect's, box-wood, single, universal, 12″	,,	,, 2 0 ,,	2 8	
,, ,, ,, ,, ,, 18″	,,	,, 4 0 ,,	5 0	
,, ,, ebonite, sets of six, same as box-wood sets	,,	,, 16 0 ,,	21 0	
,, ,, ,, single, 12″	,,	,, 2 8 ,,	3 8	
,, ,, ,, ,, universal, 12″	,,	,, 3 0 ,,	4 0	
,, ,, ivory, sets of six, same as box-wood sets	,,	,, 40 0 ,,	45 0	
,, ,, ,, single, 12″	,,	,, 4 8 ,,	7 8	
,, ,, ,, ,, universal, 12″	,,	,, 5 0 ,,	8 4	
,, ,, ,, ,, ,, 18″	,,	,, 20 0 ,,	26 0	
,, Bengalee (bigah), card board	,,	,, 0 1 ,,	.....	
,, ,, ,, metal	,,	,, 0 12 ,,	1 8	
,, diagonal, card board, 2″ long	,,	,, 0 1 ,,	0 2	
,, ,, ,, 6″ ,,	,,	,, 0 3 ,,	0 4	
,, ,, ,, 12″ ,,	,,	,, 0 6 ,,	0 8	
,, ,, metal, 2″ ,,	,,	,, 2 0 ,,	4 0	
,, ,, ,, 6″ ,,	,,	,, 2 8 ,,	6 0	
,, ,, ,, 12″ ,,	,,	,, 6 0 ,,	10 0	
,, ,, wooden, 12″ ,,	,,	,, 1 0 ,,	2 0	
,, card board, engine-divided, 18″, Holtzapffel's	,,	,, 0 14 ,,	1 5	
,, ordinary, drawing, consisting of the usual reductions of the foot, viz., $\frac{1}{16}$, $\frac{1}{12}$, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{3}{8}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, 1¼, 1½, 2, 2½, 3, 4, 5, 6 inches to the foot, three lines of inches divided into eighths, tenths, and twelfths, and the English foot decimally divided	,,	,, 0 14 ,,	1 4	
,, card board, as above, lithographed	,,	,, 0 4 ,,	.....	
,, Engineering, box-wood, in case, containing eight scales from 100 to 800 to the foot	,,	,, 15 0 ,,	20 0	
,, ,, ,, ,, ebonite sets	,,	,, 20 0 ,,	25 0	
,, ,, ,, ,, ivory sets	,,	,, 40 0 ,,	50 0	
,, Gunter's, 24″, metal, in case	,,	,, 25 0 ,,	40 0	
,, ,, 24″, wooden	,,	,, 4 0 ,,	6 0	
,, Marquois', box-wood, in case	,,	,, 7 0 ,,	9 0	
,, ,, metal ,,	,,	,, 40 0 ,,	55 0	
,, offsets, card board	,,	,, 0 1 ,,	0 2	
,, ,, ebonite (10 to 60), single	,,	,, 0 10 ,,	0 14	
,, ,, ivory (10 to 60), ,,	,,	,, 1 4 ,,	1 8	
,, ,, ,, (10 to 60), sets	,,	,, 7 0 ,,	9 0	
,, ,, wooden (10 to 60), single	,,	,, 0 8 ,,	0 10	
,, ,, ,, (10 to 60), sets	,,	,, 3 0 ,,	4 2	
,, ,, ,, triangular section (10 to 60)	,,	,, 1 7 ,,	.....	
,, Plotting, ebonite, 12″ (10 to 60), sets with offsets, in case	,,	,, 18 0 ,,	26 4	
,, ,, ivory, 12″ (10 to 60), ,, ,,	,,	,, 40 0 ,,	50 0	
,, ,, wooden, 12″ (10 to 60), ,, ,,	,,	,, 10 0 ,,	16 10	
,, ,, ebonite, 12″ (10 to 60), single	,,	,, 2 8 ,,	4 0	
,, ,, ivory, 12″ (10 to 60), ,,	,,	,, 4 8 ,,	7 0	
,, ,, metal, 12″ (10 to 60), ,,	,,	,, 10 0 ,,	15 0	
,, ,, ,, single, each inch divided into 25 parts for plotting plans on the scales of 2½ chains = 1 mile	,,	,, 2 0 ,,	5 0	
,, ,, wooden, 12″ (10 to 60), single	,,	,, 1 0 ,,	3 0	
,, ,, ,, 12″, triangular section, containing scales from 10 to 60	,,	,, 4 8 ,,	6 12	
,, ,, with movable offsets	,,	,, 10 0 ,,	30 0	
,, standard, metal, 2 feet	,,	,, 20 0 ,,	25 0	
,, ,, ,, 3 ,,	,,	,, 30 0 ,,	37 8	
,, ,, ,, 4 ,,	,,	,, 40 0 ,,	50 0	

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Scales, standard, diagonal, metal, 2 feet	Each	From 50 0 to	73 8	
" " " " 3 "	"	" 90 0 "	115 0	
" " " " 4 "	"	" 120 0 "	140 0	
Many scales require a careful description. If there is the least doubt as to the correct denomination of a scale, the indenting officer should specify the number of divisions and sub-divisions in a given measurement, and the method of numbering, for instance 12" divided into 60 parts, numbered successively from 1 to 60, each part to be sub-divided into two. Special scales can be manufactured if full description be given.				
Sectioners, dead-beat	"	" 5 4 "	.....	
Sectors, ivory, 6"	"	" 4 0 "	6 0	
" wooden, 6"	"	" 1 4 "	2 0	
" zenith, astronomical	"	" 2,000 0 "	.....	
Sextants, nautical, 6" divided on silver to 10', in case	"	" 85 0 "	140 0	
" " 8" and 9"	"	" 145 0 "	235 0	
" " with stand, with jointed legs, horizontal and vertical action, and clamping screw, in case	"	" 135 0 "	300 0	
" double, George's pattern, 6", in case	"	" 262 8 "	.....	
" " " " 9" "	"	" 350 0 "	.....	
" pocket, divided on silver, with telescope in leather case	"	" 45 0 "	90 0	
" " as above, with light ball and socket stand	"	" 105 0 "	.....	
Slide Rules, box-wood, 12"	"	" 7 8 "	.....	
" " " 24"	"	" 32 12 "	.....	
Slopes and Batters, sets of eight, viz., 1 to 1, 1¼ to 1, 1½ to 1, 2 to 1, 2½ to 1, 3 to 1 and 4 to 1, 1 in 6, 1 in 5 and 1 in 10, 1 in 8 and 1 in 12, ebonite, in case	"	" 5 0 "	6 9	
Speedometers (see Engine Counters).				
Squares, co-ordinate	"	" 30 0 "	50 0	
" optical, M. I. O. manufacture	"	" 6 8 "	10 0	
" " English	"	" 15 0 "	25 0	
" set, ebonite, sets of 6, large	"	" 7 0 "	18 0	
" " " " small	"	" 6 0 "	10 0	
" " " single, large and small	"	" 1 0 "	2 10	
" wooden, sets of 6, large	"	" 6 0 "	8 0	
" " " small	"	" 5 0 "	7 0	
" " single, large and small	"	" 0 8 "	1 0	
" set, metal, single	"	" 1 8 "	3 0	
" T, metal, plain (about Rs. 10 per foot)	"	" 20 0 "	30 0	
" " with shifting head	"	" 25 0 "	51 9	
" wooden, plain, from 18" to 54"	"	" 1 0 "	5 0	
" " with shifting head, 18" to 54"	"	" 3 0 "	7 8	
" " (mahogany), ebony edged, taper blade, fixed head	"	" 2 0 "	9 8	
" " with steel blade, 12" to 36"	"	" 4 0 "	11 0	
Stands for Compasses, Bengaleo	"	" 4 0 "	8 0	
" " Prismatic	"	" 10 0 "	20 0	
" " Surveying	"	" 10 0 "	25 0	
" Heliotropes	"	" 10 0 "	15 0	
" Plane-tables, survey pattern	"	" 7 0 "	10 0	
" " " military "	"	" 15 0 "	20 0	
" Sextants, with jointed legs, horizontal and vertical motion, and clamping screw	"	" 50 0 "	70 0	
" Telescopes, brass tripod, vertical and horizontal motion and brass clasp for telescopes of 2" and 2½" aperture	"	" 50 0 "	78 0	
" " " " 1½" and 1¾" "	"	" 40 0 "	55 0	
" " light mahogany tripod, vertical and horizontal motion and brass clasp for telescopes of 2" and 2½" aperture	"	" 40 0 "	55 0	
" " " " 1½" and 1¾" "	"	" 35 0 "	48 0	
" " tall tripod for 2" and 2½" "	"	" 50 0 "	62 0	
" " " " 1½" and 1¾" "	"	" 45 0 "	55 0	
" " round pattern, with two brass rings to bind the legs while being carried, brass screw and cap	"	" 30 0 "	45 0	
" Thermometers, sun	"	" 8 0 "	.....	
Staves, cross or offset	"	" 5 0 "	.....	
" levelling, common pattern, in 3 pieces with clamps, varnished paper scale	"	" 14 0 "	17 0	

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Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Staves, levelling, Gravatt's pattern, in 2 pieces with clamps, varnished paper scale	Each	From 14 0 to	17 0	
" " G. T. Survey pattern	"	" 24 0 "	45 0	
" " Roorke pattern, single, 12 feet, painted scale	"	" 10 0 "	15 0	
" " " " double, each staff 10 feet	"	" 18 0 "	25 0	
" " Sopwith's pattern, telescopic, in three lengths, 14 feet, varnished paper scale	"	" 15 0 "	18 0	
" " " " " painted scale	"	" 30 0 "	35 0	
" " Strange's pattern, telescopic, varnished paper scale	"	" 15 0 "	18 0	
" " " " " painted scale	"	" 30 0 "	35 0	
Stencil Plates, various. These are manufactured in M. I. O. Prices given on application to the Officer in charge.				
Straight-edges (see Rules Straight-edges).				
Sun-dials, universal, 2½", with levels and adjusting screws, in case	"	" 40 0 "	55 0	
" " 3½" " " "	"	" 48 0 "	65 0	
" " 4" " " "	"	" 55 0 "	78 12	
Surveyor's Cross, octagonal form	"	" 8 0 "	11 0	
" " with movable head and divided circle and compass	"	" 30 0 "	42 0	
Sympiesometers	"	" 30 0 "	52 8	
Tapes, measuring, metallic, 25', in leather case with folding handles	"	" 2 12 "	3 12	
" " 33' " " "	"	" 3 0 "	4 4	
" " 50' " " "	"	" 3 8 "	4 8	
" " 66' " " "	"	" 4 8 "	5 8	
" " 100' " " "	"	" 6 0 "	8 0	
" " 75 yards, for Nolan's Range-Finders	"	" 16 0 "	.....	
" steel, 25'	"	" 6 0 "	9 0	
" " 50'	"	" 10 0 "	14 8	
" " 66'	"	" 15 0 "	18 0	
" " 100'	"	" 20 0 "	25 0	
Telemeters, Adie's, 3' base	"	" 150 0 "	.....	
" Labbez, Bolton's, &c. (see Range-Finders).				
Telescopes, astronomical, 2½" aperture, by T. Cooke & Sons, mounted on tall tripod stand	"	" 253 0 "	.....	
" " 3" " " "	"	" 391 0 "	.....	
" " 3½" " " "	"	" 525 0 "	.....	
" " 3¾" " " "	"	" 643 0 "	.....	
" " 4" " " "	"	" 774 0 "	.....	
Telescopes, for observing the occultations of Jupiter's moons, on tripod stand with micrometer eye-piece	"	" 262 8 "	.....	
" naval or marine, with one draw, pancratic eye-piece, dew shade, leather sling, and caps, 1½" aperture	"	" 50 0 "	66 0	
" " " " " 1¾" "	"	" 65 0 "	82 0	
" " " " " 2" "	"	" 85 0 "	105 0	
" " " " " 2¼" "	"	" 100 0 "	120 0	
" " " " " 2½" "	"	" 110 0 "	145 0	
" " " " " 3" "	"	" 140 0 "	196 14	
" reconnoitring, with one, two, or three draws, bronzed tubes mounted in strong leather body with sling straps, or in leather case with sling	"	" 25 0 "	45 0	
" reconnoitring, from 2" to 3" aperture, with stand	"	" 126 0 "	275 0	
" terrestrial, with pancratic eye-piece and dew shade, in case, 1½" aperture	"	" 50 0 "	66 0	
" " " " 1¾" "	"	" 70 0 "	85 0	
" " " " 2" "	"	" 80 0 "	105 0	
" " " " 2¼" "	"	" 90 0 "	120 0	
" " " " 2½" "	"	" 110 0 "	148 0	
" " " " 2¾" "	"	" 120 0 "	219 0	
" " " " 3" "	"	" 150 0 "	270 0	
" " " " " with table stand	"	" 50 0 "	78 0	Extra.

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Theodolites, Everest's, 4″, with vertical arc divided on silver reading to 30 seconds, in box, with stand - -	Each	From 200 0 to	380 0	
,, ,, 5″, ,, ,, ,, -	,,	,, 225 0 ,,	420 0	
,, ,, 6″, with vertical arc reading to 20 seconds, in box, with stand -	,,	,, 275 0 ,,	517 0	
,, ,, 7″, reading to 10 seconds, in box, with stand - -	,,	,, 350 0 ,,	616 0	
,, ,, 8″, with vertical arc reading to 10 seconds, in box, with stand -	,,	,, 440 0 ,,	780 0	
,, ,, 10″, ,, ,, ,, -	,,	,, 600 0 ,,	1,078 0	
,, ,, 12″, ,, ,, ,, -	,,	,, 700 0 ,,	1,200 0	
,, ,, 14″, ,, ,, ,, -	,,	,, 800 0 ,,	1,320 0	
,, ,, Colonel Strange's pattern, by Cooke and Troughton and Simms, from 5″ to 10″ diameter of circle, in box, with stand -	,,	,, 180 0 ,,	600 0	
,, ,, 5″, without vertical arc (Revenue Survey pattern), in box, with stand - -	,,	,, 175 0 ,,	350 0	
,, Miner's, transit, in box, with stand -	,,	,, 600 0 ,,	.....	
,, transit, 3″, with vertical circle 3″, for Explorers, Casella's pattern, in box, with round stand - -	,,	,, 200 0 ,,	275 0	
,, ,, 3″, with vertical circle 3″, for Explorers, Cooke's pattern, in box, with stand - -	,,	,, 200 0 ,,	350 0	
,, ,, 4″, with vertical circle reading to 30 seconds, with stand -	,,	,, 275 0 ,,	440 0	
,, ,, 5″, with vertical circle reading to 30 seconds, with illuminated axis for astronomical work, in box, with stand - -	,,	,, 320 0 ,,	528 0	
,, ,, 6″, with vertical circle reading to 20 seconds, with illuminated axis for astronomical work, in box, with stand - -	,,	,, 385 0 ,,	717 0	
,, ,, 7″, with vertical circle reading to 10 seconds, with illuminated axis for astronomical work, in box, with stand - -	,,	,, 450 0 ,,	748 0	
,, ,, 8″, ,, ,, ,, ,, -	,,	,, 675 0 ,,	935 0	
,, ,, 10″, ,, ,, ,, ,, -	,,	,, 850 0 ,,	1,265 0	
,, ,, 12″, ,, ,, ,, ,, -	,,	,, 1,000 0 ,,	1,620 0	
,, ,, 12″, each circle read by two micrometer microscopes to 1 second, pointer microscopes for reading the figures, micrometer eye-piece, &c., with braced iron stand -	,,	,, 2,390 0 ,,	.....	
,, ,, large size, from 14″ to 36″, by Troughton and Simms, used in the Great Trigonometrical Survey of India, are deposited in the Mathematical Instrument Office.				
,, ,, 5″ and 6″, with complete vertical circle, but without illuminating apparatus for night work, in box, with stand - - -	,,	,, 300 0 ,,	675 0	
,, ,, 5″, without vertical circle, for Railway purposes, with stand -	,,	,, 275 0 ,,	475 0	
,, ,, 5″, without vertical circle, with long telescope and centring apparatus to stand for Railway purposes -	,,	,, 350 0 ,,	550 0	
,, ,, 6″, ,, ,, ,, ,, -	,,	,, 450 0 ,,	586 0	
,, subtense, 6″, with ordinary stand - -	,,	,, 300 0 ,,	525 0	
,, with vertical circle, micrometer eye-piece, and stand, for use in exploratory expeditions for obtaining linear distances without actual measurements -	,,	,, 500 0 ,,	735 0	
Thermometers, boiling point, with apparatus complete (see Hypsometers).				
,, ,, ,, ,, spare for above -	,,	,, 18 0 ,,	26 0	

1025/8

Names of Instruments.	Approximate rates of issue of new and repaired Instruments.			Remarks.
		Rs. As.	Rs. As.	
Thermometers, chemical, divided from 0° to 220° -	Each	From 3 0 to	10 0	
,, ,, ,, ,, 0° to 400° -	,,	,, 3 8 ,,	11 0	
,, circular, metallic, 8″ diameter -	,,	,, 30 10 ,,	.....	
,, clinical - - -	,,	,, 5 0 ,,	8 0	
,, common, in japanned tin cases - -	,,	,, 2 0 ,,	7 0	
,, deep sea, maximum and minimum, on Six's principle, protected in vulcanite mounting, with black divisions, &c., on glass, in round copper case, 7¼″ by 1¼″ outside, by Casella - -	,,	,, 40 0 ,,	.....	
,, Draper's, self-recording, by Hicks -	,,	,, 140 0 ,,	.....	
,, maximum, self-registering, engine-divided on stem, divided and figured on opal or porcelain scale, mounted in mahogany frame -	,,	,, 10 0 ,,	18 5	
,, ,, self-recording dry bulb -	,,	,, 10 0 ,,	16 0	
,, ,, ,, wet ,, -	,,	,, 10 0 ,,	16 0	
,, minimum, ,, divided on stem, divided and figured on opal or porcelain scale in mahogany frame - -	,,	,, 10 0 ,,	26 0	
,, ,, self-registering on porcelain scale divided on stem, Casella's mercurial - -	,,	,, 35 0 ,,	48 12	
,, ,, self-registering, Negretti and Zambra's patent mercurial, vertical	,,	,, 43 12 ,,	.....	
,, ,, ,, ,, horizontal	,,	,, 33 12 ,,	.....	
,, maximum and minimum, self-registering on same board, 6″ -	,,	,, 10 15 ,,	.....	
,, ,, ,, ,, ,, ,, 9″ -	,,	,, 13 2 ,,	.....	
,, ,, ,, ,, ,, Casella's pattern	,,	,, 21 14 ,,	36 12	
,, minimum, self-registering, dry bulb -	,,	,, 10 0 ,,	18 0	
,, ,, ,, wet ,, -	,,	,, 10 0 ,,	16 0	
,, ,, terrestrial (Hicks' Patent "Cylinder Jacket"), on brass stand -	,,	,, 18 5 ,,	.....	
,, Six's self-registering - -	,,	,, 30 0 ,,	35 0	
,, solar radiation, black bulb in vacuo -	,,	,, 20 0 ,,	26 4	
,, ,, ,, ,, in open air -	,,	,, 11 0 ,,	17 8	
,, terrestrial ,, on stand for the grass -	,,	,, 15 8 ,,	.....	
,, spare, for Mercurial Barometers -	,,	,, 3 0 ,,	4 8	
,, ,, Hydrometers, scale on wood -	,,	,, 2 8 ,,	3 8	
,, ,, ,, ebonite or ivory	,,	,, 5 8 ,,	7 8	
,, ,, Hygrometers, dry or wet bulb -	,,	,, 20 0 ,,	30 0	
,, standard, divided to ½ degrees -	,,	,, 25 0 ,,	39 5	
,, ,, ,, ,, ¼ ,,	,,	,,	.....	
Tide Gauges (self-recording) for showing the rise and fall of water in harbours, rivers, canals, &c., recording the exact time at which any increase or reduction may have occurred - -	,,	,, 735 0 ,,	4	
Trammel Heads for Beam Compasses	,,	,, 8 0 ,,	25 0	
Transit Instruments, 2½″ aperture, one setting circle divided on silver, striding level. Illuminating Lamp on cast iron stand - -	,,	,, 500 0 ,,	700 0	
Transit Instruments, portable, on stand, supported by three levelling screws -	,,	,, 525 0 ,,	.....	
,, ,, good, serviceable, 2nd-hand -	,,	,, 200 0 ,,	500 0	
Vanes, wind, small and large - - -	,,	,, 3 0 ,,	80 0	
Watches, common - - - -	,,	,, 10 0 ,,	50 0	
,, stop - - - -	,,	,, 100 0 ,,	125 0	
,, travellers' (half Chronometers or good English levers) -	,,	,, 70 0 ,,	250 0	
,, Chrono-micrometer, with Kew certificate A or B	,,	,, 275 0 ,,	320 0	
Yards, standard (certified copies) - -	,,	,, 5 0 ,,	6 0	

Names of Books.	Approximate rates of issue of new and repaired Books.		Remarks.
		Rs. As.	Rs. As.
Catalogue of Instruments in M. I. O. (Descriptive)	Each	From 2 0 to	.....
Hints to Travellers	"	" 1 8 "	4 0
" latest Edition	"	" 5 0 "	.....
Manual of Surveying, Thuillier's	"	" 12 0 "	.....
Nautical Almanacs	"	" 2 0 "	.....
Navigation, Norie's	"	" 10 0 "	.....
" Raper's	"	" 10 0 "	.....
Tables, Auxiliary, G. T. Survey	"	" 2 0 "	.....
" Barometrical, Mackesy's	"	" 2 0 "	.....
" Hydrometer, Sike's	"	" 3 4 "	.....
" Hypsometer	"	" 0 12 "	.....
" Logarithmic, Chamber's	"	" 2 12 "	.....
" " Hutton's	"	" 8 0 "	.....
" " Shortrede's (Sines & Tangents)	"	" 20 4 "	.....
" " Taylor's	"	" 30 0 "	.....
" Traverse, Boileau's	"	" 9 0 "	.....
" " Gurden's	"	" 15 0 "	.....
" " Shortrede's	"	" 10 0 "	.....

Mathl. Instt. Office,
Calcutta,
1st November 1890.

M. W. ROGERS, *Lieut. Col., R.E.,*
Assistant Surveyor General,
In charge M. I. O., Survey of India Dept.

Ent 3/7/93

1025 W

Form No. M. 19.

No. 1941

1035

Survey of India Department,
MATHEMATICAL INSTRUMENT OFFICE.

Telegraphic Address,
Assistant Surveys, Instts.

Calcutta, 27th March 1893.

From

The Officer in Charge,

Mathematical Instrument Office,

To The Secretary to the Government of Madras
Public Works Department.
Madras.-

Sir,

There is at present a great demand for Instruments of the kinds mentioned in the accompanying list and with a view to minimizing the Indents for new instruments from England- I should be obliged if you would issue instructions to all Offices under your control to examine their stocks and return to this Office any instruments of the kind mentioned which are not absolutely necessary in order that they may be repaired & issued again-

I have the honour to be,
Sir
Your most obed. Servant
M W Rogers Lt Col R.E.
Incln Mathl Instt Office-
WRS.

E. W. CURRENT No. 3117

No. 1025. Dated 13 April 1893

PUBLIC WORKS DEPARTMENT.

1025/10

PROCEEDINGS OF THE MADRAS GOVERNMENT.

READ the following

Letter from the officer in charge mathematical Instrument office - No. No. 1941 dated 27 March/93 Calcutta.

Communicated to Supty: Engrs who will arrange to send to the mathematical Instrument Department Calcutta, surplus instruments of the kinds specified - They will see that credit is afforded to Provincial funds for the value of such instruments, in accordance with para 11. appendix N of the P.W. Code.

Supty: Engrs: C. A. Supt: of Works. P.P. } with copy of letty

Ex: PW accts:

The officer in charge mathematical Instrument office, Calcutta.

DESPATCHED 27 APR. 93

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C.W.C. 3117

Govt. of (1893) Madras.
PUBLIC WORKS.



G.O. 13 April 1893. No. 1025 W

C. 16/K

Mathematical Instruments

Letter from the Officer in charge, Mathematical Instrument Office, Calcutta regarding that — which are not absolutely necessary may be returned to him in view to their being repaired & issued again to meet the annual heavy demand, expd.

1642 R

to P.E.S. in Construction

1895
14