SOCIÉTÉ GENEVOISE

FOR THE CONSTRUCTION OF PHYSICAL
& MECHANICAL APPARATUS.

GENEVA

NEW

SPECTROMETERS

&

SPECTROGRAPHS

OF THE

GREATEST EXACTITUDE

WITH THEIR

ACCESSORIES

1913

IMPRESSION SADAG SÉCHERON-GENÈVE

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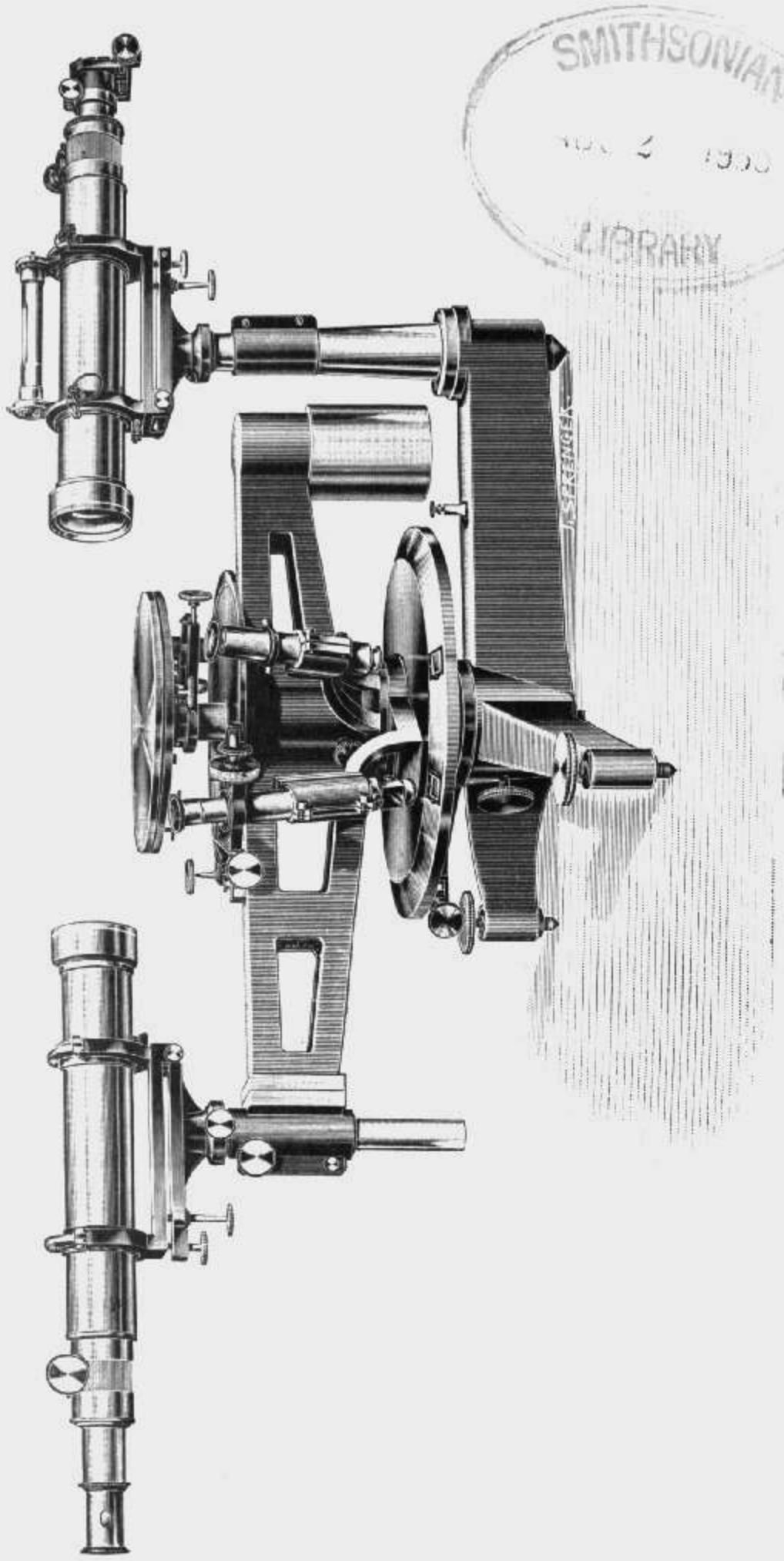


SPECTROMETER Nos. 2206 & 2208.

General Description

THESE SPECTROMETERS are specially constructed for all kinds of work where the greatest exactitude is essential. The excellence of their workmanship classes these instruments as of the highest order, and, in particular, the centering arrangement for their moving parts is absolutely true.

The following is a description of their principal points : —

TELESCOPES have double extension and rack adjustment; adjusting collars, with a level, are also fitted. The slit and eye piece are interchangeable.

MOVING TELESCOPE SUPPORT, of heavy construction, in hard bronze. The section, whilst extremely strong and rigid, is designed so as to be of the least weight. The central pivot has a long and rigid conical axis. No. 2209 has a special arrangement for the support of the weight by means of a ball bearing and an adjustable socket. Clamping and fine motion screws are fitted.

CIRCLES have double graduations in silver reading to $^1/_{12}°$. The circle is completely protected by a metal covering, with apertures with sliding glass fronts, for the microscopes. The circle is fitted with a clamping screw and also an adjusting screw; and its movement is entirely independent of the rest of the spectrometer.

MICROSCOPES. There are two microscopes for Nos 2206 & 2208 and four microscopes for No 2209. Their magnification is forty times and they read to 1 second of arc. It is possible to estimate to $^1/_{10}$" second. Turns are counted in order to reckon minutes, and the drum is graduated to 60 seconds. The microscope field is lit by small, 4 volt, electric lamps.

The auxiliary microscope reads direct to degrees and minutes, and its field is sufficiently large to view two numbers on the divided scale.

TELESCOPE CRADLES have a long vertical adjustment, a clamping screw, on the moveable fitting, levelling screws are also fitted. The telescopes can be turned end for end in their cradles as an adjustment control. Hinged collars support the level.

STAGE for one prism is independent and of large size. It is fitted with clamping and adjusting screws.

This stage is easily removed without dismounting the apparatus or necessitating a tool, if it is desired to change the dispersion system.

SLIT. Symmetrical, of great precision, with a graduated drum and comparator prism.

COVERING protection is fitted on the stage with two shutter apertures.

All the spectrometers are designed for use, with the accessories mentioned over page 7.

REFERENCES

Cleveland University (Prof. DAYTON MILLER).
Aix-la-Chapelle University.
Bâle University (Prof. R. BERNOUILLI).
Lausanne University (Prof. DUTOIT).
Toronto University,
Bureau of Standards, Washington.
University of Naples.
University of Budapest (Prof. Dr VON KLUPATHY).
University of Saskatchewan, etc., etc.

SPECIFICATION

Spectrometer with two Microscopes N°. 2206.

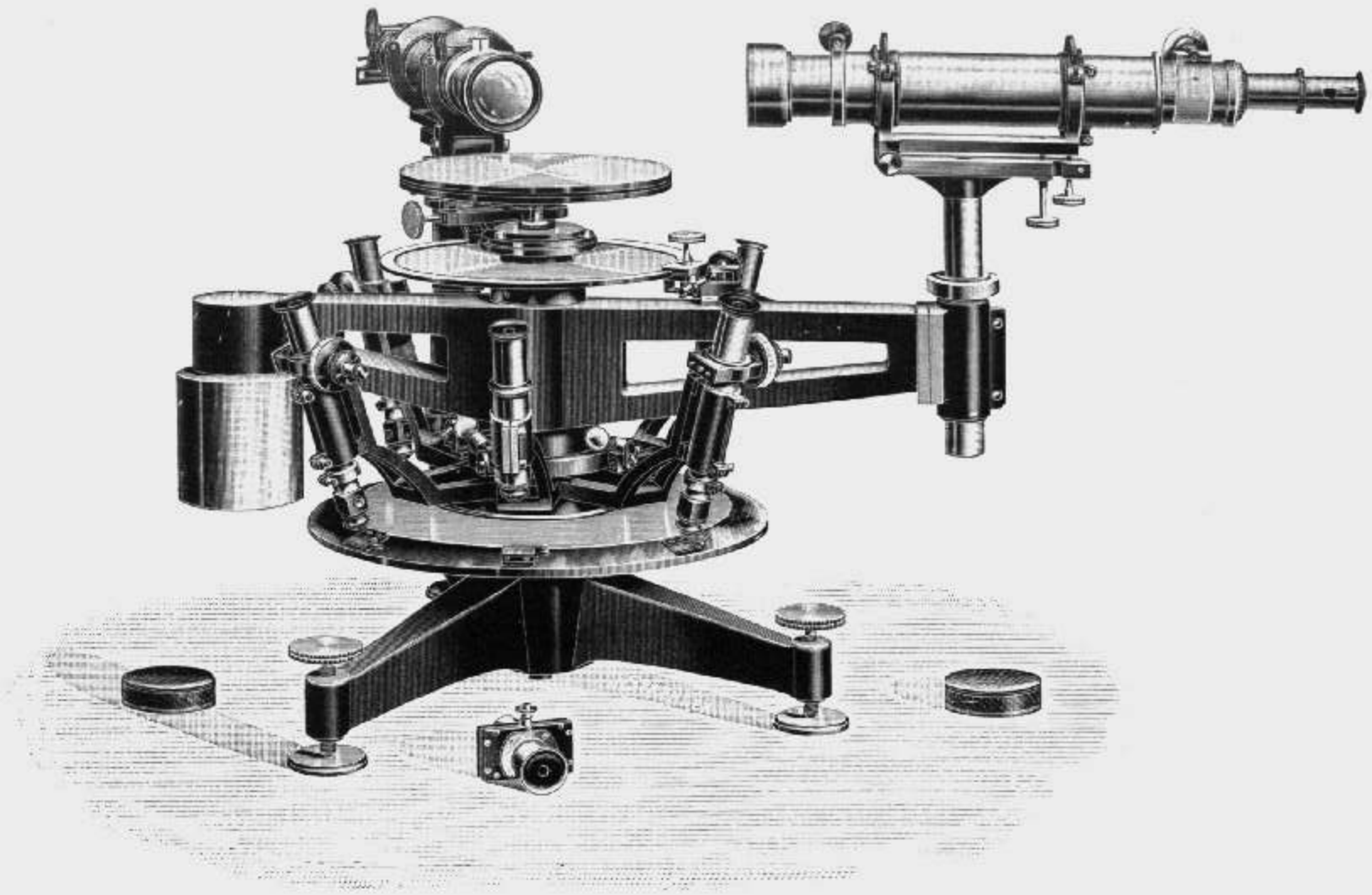
Telescope and collimator of 33,5 mm. aperture and 325 mm. focal length; Circle divisions are marked to $^1/_{12}{}^\circ$ on plate 263 mm. in diameter. The whole design is worked out so as to eliminate all errors, due to faulty centring arrangements; and the division errors of the circle do not exceed 2.00 seconds.

Spectrometer with two Microscopes N°. 2208.

Same construction as the above but of larger dimensions. Telescope and collimator of 47 mm. aperture and 405 mm. focal length; Circle divided to $^1/_{12}{}^\circ$ on plate 268 mm. in diameter. Readings to 1 second of arc by means of the microscopes. Division errors and errors due to any fault in centring arrangement are less than 2 seconds.

Spectrometer with four Microscopes N°. 2209.

The difference in construction between this instrument and those mentioned above, lies principally in the strengthening and lengthening of the central axis, so as to render the centering arrangement still more exact. The telescopes are the same as those in N° 2208 and the circle is 308 mm. diameter. The telescope supports are strengthened so as to allow of the use of heavy pieces of auxiliary apparatus without the least fear of bending in any of the parts. The systematic errors of the whole apparatus do not exceed 0,6 of a second.



LARCE SPECTROMETER WISH 4 MICROSCOPES No. 2209.

Accessories and auxiliary apparatus, recommended for use with these spectrometers :

RUBENS **arrangement** for the **infra-red spectrum,** consisting of two adjustable cradles with parabolic mirrors, slit eyepiece, linear bolometer, graduations on the mirror mountings, prism of rock-salt.

Dark Chamber with **tele-objective** giving double magnification. This Dark Chamber can be made to any required size and for use either with rigid or flexible plates, when quartz objectives are employed. The frame, supporting the chamber, can be tilted in order to obtain exact focus.

Polarisation Apparatus with two nicols and a divided circle reading to one minute, and a Babinet compensator for elliptic polarisation.

Quartz Optical Equipment for the study of the **ultra-violet** spectrum, consisting of two objectives and of a prism held automatically at the position of minimum of deviation; the focal distances of the rays of zinc, cadmium and aluminium are marked on the telescopes; Sorets fluorescent eyepiece.

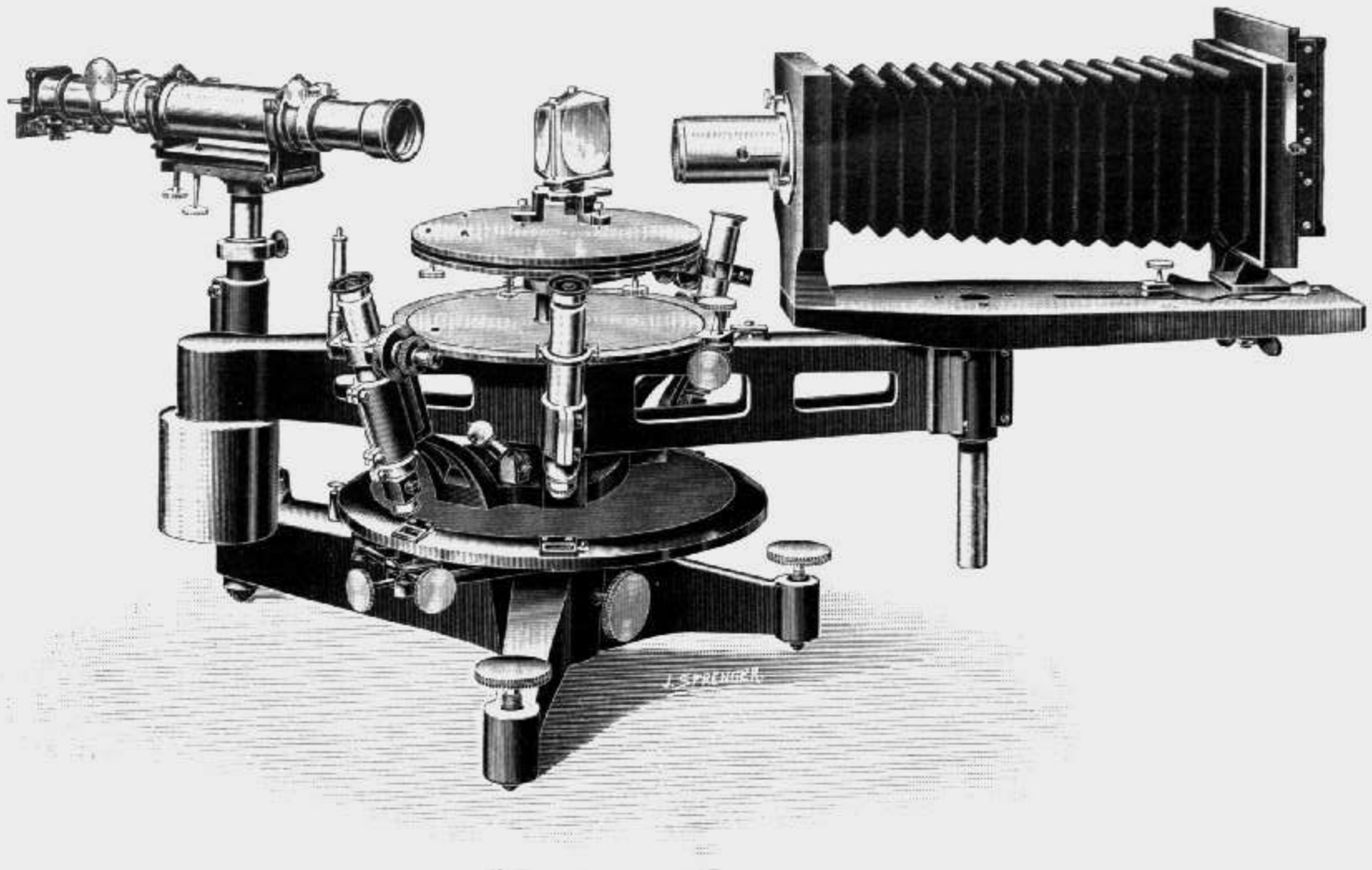
A **Stage** with an **accurate divided circle.**

A **Stage** with five flint prisms, held automatically in the position of least deviation.

A **Stage** with three RUTHERFORD prisms held automatically in the position of least deviation.

———▫———

	£ s.	$ cts
A **Slit Eyepiece** (Symmetrical)	4. 0	20.0
A **Double Donders Slit**	12. 0	60.0
A **Micrometer Eyepiece** of the moving thread type	2. 8	12.0
Portable Accumulator 30 ampere hours, for the lighting of the microscopes . . .	1. 4	6.0
An **Alternating Current Transformer** with the same object..	1. 0	5.0
A **Projection Lens** with an adjustable foot 50 mm. diameter and 400 mm to 600 mm. focal length.	1.12	8.0



SPECTROMETER No. 2206 WITH DARK CHAMBER.

TABLE OF PRICES AND OF OPTICAL CONSTANTS FOR SPECTROMETERS

Catalogue No.	Aperture of objective	Dispersive System	Dispersion C. F.	* $\frac{\lambda}{d\lambda}$	Least Interval. to be separated Angstrom units	PRICE English Money £ s. d.	*E* Price of Additions English Money £ s. d.	PRICE American Money $ cts.	*E* Price of Additions American Money $ cts.
	mm.	*(a)* without prism	—	—	—	66. 8.0	*Base Price.*	332 0	*Base Price.*
		(b) 1 prism 60° Flint, 65 mm. aperture	2°.45'	7620	0.77	69. 4.0	2.16.0	346 0	14 0
2206	33,5	*(c)* 5 prisms Flint, 40 mm. aperture	13°.45'	23450	0.25	88. 0.0	21.12.0	440 0	108 0
		(d) 5 prisms Flint, 65 mm. aperture	13°.45'	38100	0.15	96. 0.0	29.12.0	480 0	148 0
		(e) 3 prisms Rutherford, 40 mm. aperture	10°.18'	34500	0.17	96. 0,0	29.12.0	480 0	148 0
		(a) without prism	—	—	—	72.16.0	*Base Price.*	364 0	*Base Price.*
		(b) 1 prism 60° Flint, aperture 95 mm.	2°.45'	11100	0.53	80. 0.0	7. 4.0	400 0	36 0
2208	47	*(c)* 5 prisms Flint, aperture 65 mm.	13°.45'	38100	0.15	104. 0.0	31. 4.0	520 0	156 0
		(d) 5 prisms Flint, aperture 92 mm.	13°.45'	53800	0.11	120. 0.0	47. 4.0	600 0	236 0
		(e) 3 Rutherford prisms apertune 55 mm.	10°.18'	49000	0.12	116. 0.0	43. 4.0	580 0	216 0
		(a) without prism.	—	—	—	88.16.0	*Base Price.*	444 0	*Base Price.*
		(b) 1 prism Flint, aperture 95 mm.	2°.45'	11100	0.53	96. 0.0	7. 4.0	480 0	36 0
2209	47	*(c)* 5 prisms Flint, aperture 65 mm.	13°.45'	38100	0.15	120. 0.0	31. 4.0	600 0	156 0
		(d) 5 prisms Flint, aperture 92 mm.	13°.45'	53800	0.11	136. 0.0	47. 4.0	680 0	236 0
		(e) 3 Rutherford prisms aperture 55 mm.	10°.18'	49000	0.12	132. 0.0	43. 4.0	660 0	216 0

These prices include : the spectrometer according to its specification, the dispersion system with its corresponding mounting, a symmetrical slit of precision with graduated drum, 3 eyepieces of different powers, one being of the autocollimator, a slit eyepiece with instantaneous aperture and wide field.

* These numbers are calculated for the *D* line of sodium. The flint, used by the Société Genevoise, has an index number $n_D = 1.7174$. When other dispersive systems are desired to be used with the same spectrometer, the total price should be calculated by adding to the base price, the price of the additions, according to column *E*.

Dispersive systems of more than one prism are always delivered with an arrangement for holding them at the position of least deviation.

Quartz optical equipment for the study of the **ultra-violet spectrum**

Addition to	Aperture of prism mm.	Aperture of Objective	* $\frac{\lambda}{d\lambda}$	PRICE of this Addition £	$
2206	55 × 35	33	18500	12	60
2208	75 × 50	46	25300	16	80
2209	75 × 50	46	25300	16	80

This price includes : a prism, an objective collimator compensated for rotary polarization, an objective analyser corresponding to the dimensions indicated above, an arrangement for holding the prism automatically at the position of least deviation, graduations on the focussing arrangement of the telescopes for marking the focal distances corresponding to the rays of zinc, cadmium and aluminium, (Mascart's nomenclature) as well as the Fraunhofer rays *A*, *D*, *F*, *H* and *P*, — supposing that the quartz optical fitments are used with the telescopes, as supplied with the spectrometers.

* $\frac{\lambda}{d\lambda}$ indicated above are valuable for a wave length of about 300 μμ.

			£ s. d.	$
Additional telescopes mounted with quartz objectives, without slit.	*Each*	N°. 2206	5. 8.0	27
	pair	N°. 2208	6. 0.0	30
	for	N°. 2209		

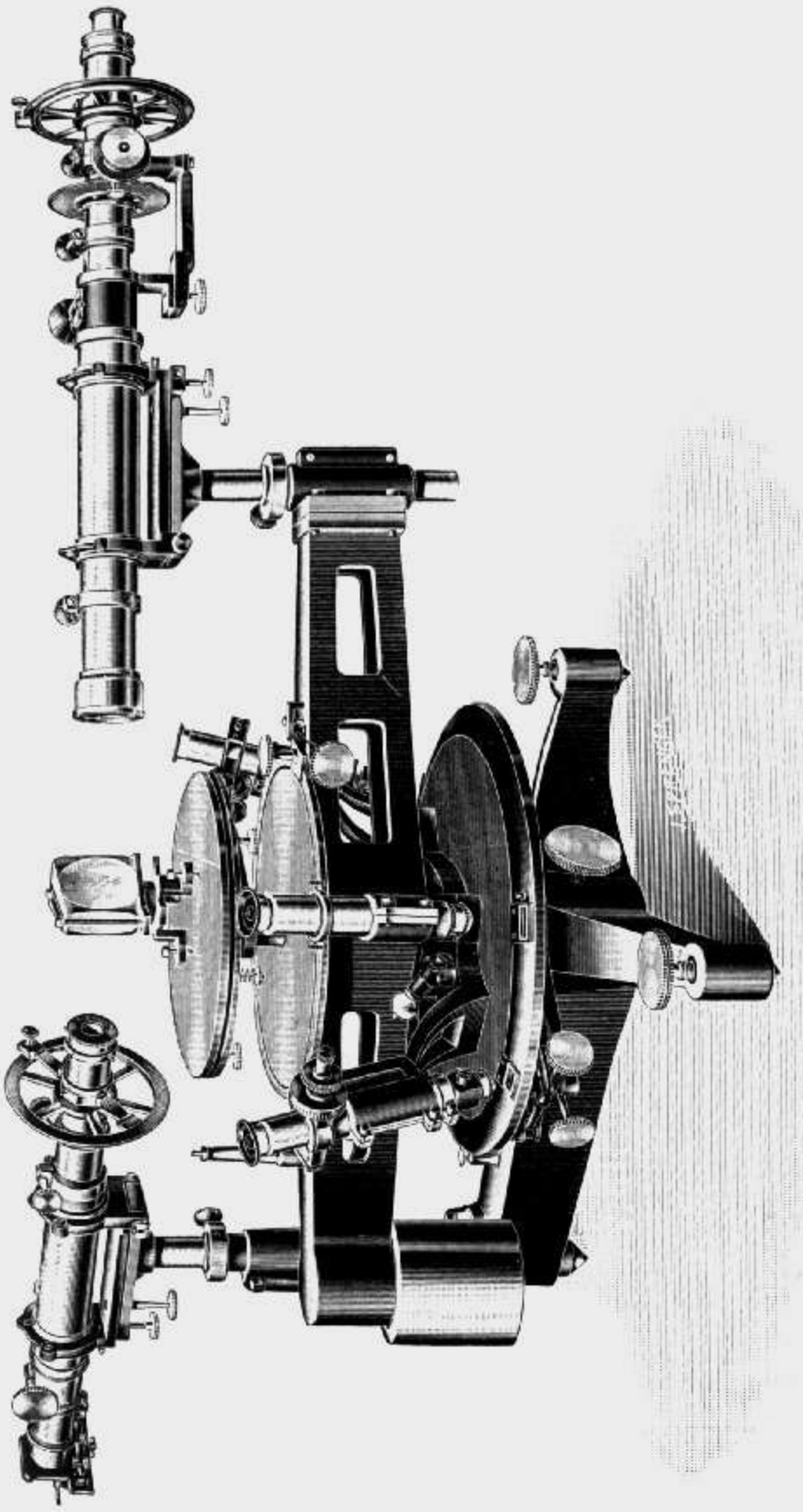
Rubens arrangement for the **infra-red spectrum**

Additional to	Aperture of prism mm.	Aperture of Mirrors	* $\frac{\lambda}{d\lambda}$	PRICE of this Addition £ s. d.	$
2206	55	34	240	24.16.0	124
2208	70	46	310	30.16.0	154
2209	70	46	310	30.16.0	154

This price includes : — the mirror supports, interchangeable with those of the telescopes; a rock-salt prism with an arrangement for polishing the prism afresh; a symmetrical slit (precision type), an adjustable eyepiece, a linear bolometer interchangeable with the eyepiece. The focal length of the mirrors is equal to 10 times their aperture.

* For a wave length of about 10 μ.

		Spectrometer No. 2206	2208	2209
Polarization apparatus with BABINET compensator	£	18.0.0	18.0.0	18.0.0
	$	90.0	90.0	90.0
Table with divided **circle** (precision type)	£	11.0.0	12.0.0	12.0.0
	$	55.0	60.0	60.0
Dark chamber with achromatic **teleobjective** 9×12 cm. with frame, capable of tilting for focussing	£	16.0.0	18.0.0	18.0.0
	$	80.0	90.0	90.0
Achromatic **objectives** in fluorspath and quartz . . .		*Price on application.*		
Dark chamber — other sizes		" " "		
Cornu's prism — with mounting	£	12.0.0	15.4.0	15.4.0
	$	60.0	76.0	76.0
Autocollimator telescope with slit, lighting prism and eyepiece		*Price on application.*		
Chain of prisms, with a silvered surface on the last prism		" " "		



SPECTROMETER WITH POLARIZING APPARATUS.