Description of the Bausch & Lomb Grand Model (DDS) from the1898 catalog

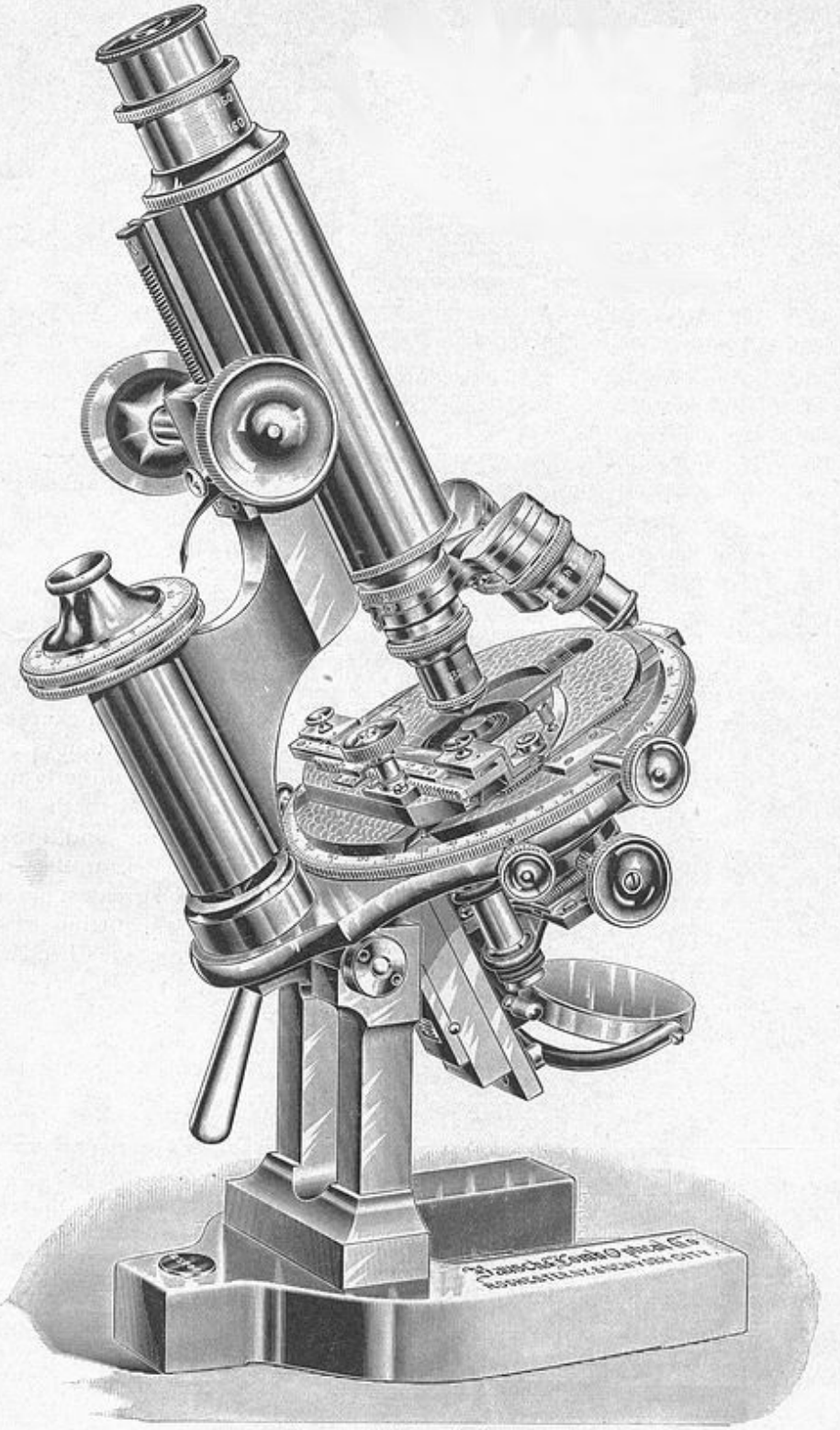

Figure one-half actual size.

DDS—CONTINENTAL MICROSCOPE.

GRAND MODEL.

CONTINENTAL MICROSCOPE.

GRAND MODEL.

DS & DDS.

This microscope stand is an ideal instrument in the fullest sense of that word; viz., perfect in design as far as the limitations of the human mind will permit, and perfect in construction as far as it is possible for human skill to perfect anything.

The large body tube, epecially constructed to permit a large cone of light to pass from the objective, as well as its complete adjustments, fits this stand especially for Photo-micrography.

The stand is of the finest brass throughout, and is finished in the most appropriate manner in every part. The base, while of the horseshoe type, is extra heavy and has the back claw prolonged so as to virtually form a tripod base which is entirely stable in any position of the microscope. The pillar, consisting of two massive columns, supports the stage and arm in a manner particularly adapted to secure solidity and at the same time add grace to the instrument. The stage is of unusually large size, measuring 126 mm. in diameter, and is either fitted with vulcanite plate in the DS, or with mechanical stage in the DDS stands. In either case the stage is revolving and with centering screws, whereby the geometrical center of the stage may be made to accurately coincide with the optical axis of the objective. The mechanical stage supplied with the DDS stand is the same as that described on page 19, except that it is larger, to conform to the larger stand, and has both the stop against which the object slide rests and the movable finger adjustable and provided with graduations for record purposes. The heads of the centering screws are also provided with graduations and index and with a series of lines recording the number of revolutions of the screw. These extra graduations make this the **only microscope made** with revolving mechanical stage with which it is possible to accurately record the position of any given object in such a manner that it can be referred to again if the instrument shall have been used *ad interim* for other work.

The mechanical stage is readily interchangeable with the plain revolving stage, as both are made to standard gauges. To effect the change it is only necessary to loosen the centering screws and substitute one stage for the other. The purchase of both stages is recommended, as the plain stage will often be required where the mechanical stage would not be, and *vice versa*.

The fine adjustment is our improved triangular bar adjustment, in which the movement is by micrometer screw of such accuracy and delicacy that there is absolutely no lost or lateral motion possible. In order to give **increased delicacy** in manipulation the head of the micrometer screw is made **extra large** and has a concavity at the apex in which to rest the

index finger for greater steadiness. The circumference is graduated to 100 parts, permitting measurement of the thickness of objects under observation.

The coarse adjustment is by diagonal rack and pinion, the advantage of the diagonal teeth being that much greater delicacy of movement is secured, together with greater lasting qualities, as three teeth engage at all times and with a shearing contact instead of in the jarring fashion as with the straight rack. The diagonal rack and pinion as made by us is entirely free from all back lash or lost motion. The main tube is of large size and has nickeled and graduated draw tube sliding in cloth-lined sleeve and taking standard gauge eyepieces. The sleeve carrying draw tube is removable when using the stand for photography.

The substage is our New Complete Substage as described on pages 15 and 16.

This microscope is made in two forms:

DS with Revolving Vulcanite Stage.
DDS with Revolving Mechanical Stage.

DS1.	Stand DS with 1 eyepiece, and $\frac{2}{3}$ inch and $\frac{1}{6}$ inch objectives	**$130.00**
DS2.	DS1 with double revolving nosepiece	**135.00**
DS3.	Stand DS with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{6}$ inch objective	**132.00**
DS4.	DS3 and double revolving nosepiece	**137.00**
DS7.	Stand DS with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{6}$ inch dry, and $\frac{1}{12}$ inch oil immersion objectives	**163.50**
DS8.	DS7 and triple revolving nosepiece	**171.00**
DDS1.	Stand DDS with 1 eyepiece, $\frac{2}{3}$ inch and $\frac{1}{6}$ inch dry objectives	**160.00**
DDS2.	DDS1 with double revolving nosepiece	**165.00**
DDS3.	Stand DDS with 2 eyepieces, $\frac{2}{3}$ inch and $\frac{1}{6}$ inch objectives	**162.00**
DDS4.	DDS3 and double revolving nosepiece	**167.00**
DDS7.	Stand DDS with two eyepieces, $\frac{2}{3}$ inch and $\frac{1}{6}$ inch dry, and $\frac{1}{12}$ inch oil immersion objectives (3¥.)	**200.00**
DDS8.	DDS7 and triple revolving nosepiece	**207.50**
	Plain Revolving Stage for DDS, extra	**10.00**

NEW COMPLETE SUBSTAGE.

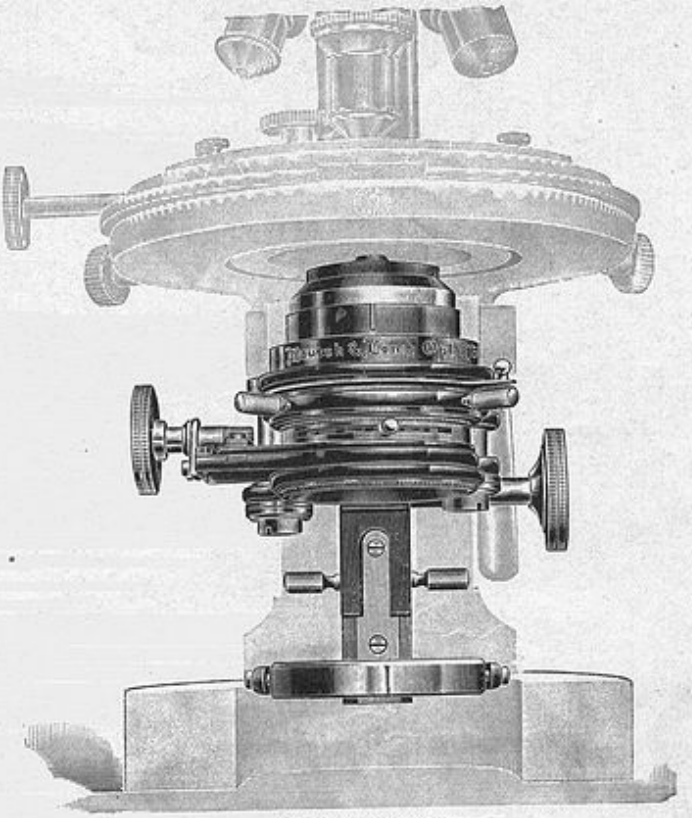

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Fig. 1. Showing Substage closed.

We introduce herewith an entirely new construction of the Complete Substage. All substages heretofore constructed have been deficient either in stability or convenience, and more often than otherwise in both. The very limited space to be used and the variety of adjustments required in the substage have made it very difficult to design a form which, while sufficiently convenient, would be rigid enough to withstand constant wear and at the same time not be out of proportion to the microscope. Our New Complete Substage obviates all these difficulties in the simplest possible manner, and is without question the most complete and practical substage yet made.

The principal points of the construction are shown in the engravings: Fig. 1, showing the substage as in actual use; Fig. 2, the parts separated. The entire substage is supported on a heavy metal bar joined to the main arm of the microscope, and to which it is attached by slide with rack and pinion, whereby the whole substage may be adjusted with reference to the microscope stage. The slide and rack and pinion are the same as used on the coarse adjustment of the microscope, insuring the same accuracy and wearing qualities, the automatic device for retaining the pinion in adjustment, and the same thickness of metal having been retained.

The substage is composed of three parts, arranged one above the other.

The upper part consists of a fixed ring, supporting the removable Iris diaphragm. This diaphragm is operated by a lever, easily accessible from the front of the substage, and is so arranged as to come directly in contact with the object slide if desired, thus being in the most effective position

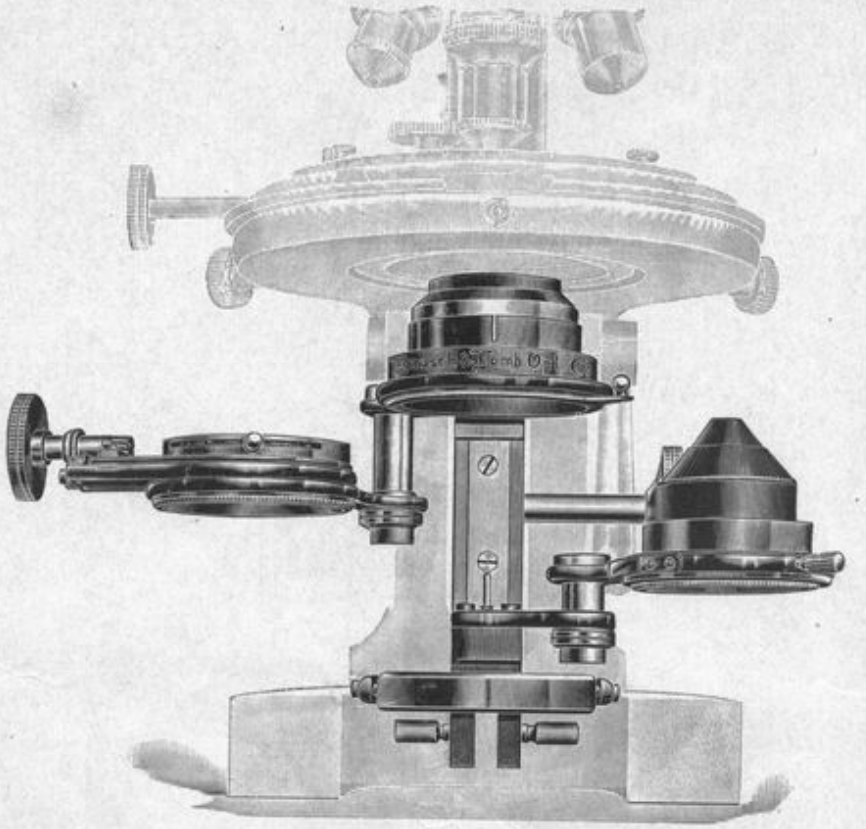

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Fig. 2. Substage with parts separated to show construction.

for use without the condenser. When the condenser is in use this Iris Diaphragm can be used to limit the volume of light entering the objective, without limiting the angle of the illuminating cone. This method of controlling the light is of the utmost importance in the examination of highly refractive transparent bodies, such as living bacteria, diatoms, and similar objects. The middle section of the substage is movable vertically on the main substage axis and consists of a ring, with centering screws, carrying Abbe condenser, 1.20 N. A. The condenser ring swings laterally to the left of the instrument in such a manner that the condenser is entirely out of the path of rays from the mirror, and is also perfectly free for changing accessories. The condenser ring, the arm on which it is carried, and the sliding support are all of the most stable construction, so that there is perfect rigidity and accuracy of centering throughout. The vertical adjustment of this section of the substage permits the condenser to be brought in immersion contact with the object slide or to be placed in any other position desired without reference to the position of the upper Iris Diaphragm. The lower section of the substage carries the large Iris Diaphragm which is used below the condenser. This diaphragm may be swung from under the condenser to the right of the instrument. It is so mounted that it may be rotated upon its own axis and is laterally movable by rack and pinion when oblique illumination is desired.

This substage is supplied with all microscopes the catalogue designation of which ends in S; for example, CCS, etc.

When desired for other microscopes we shall be pleased to arrange by letter for any fitting which may be required.

REVOLVING MECHANICAL STAGE.

(NEW CONSTRUCTION.)

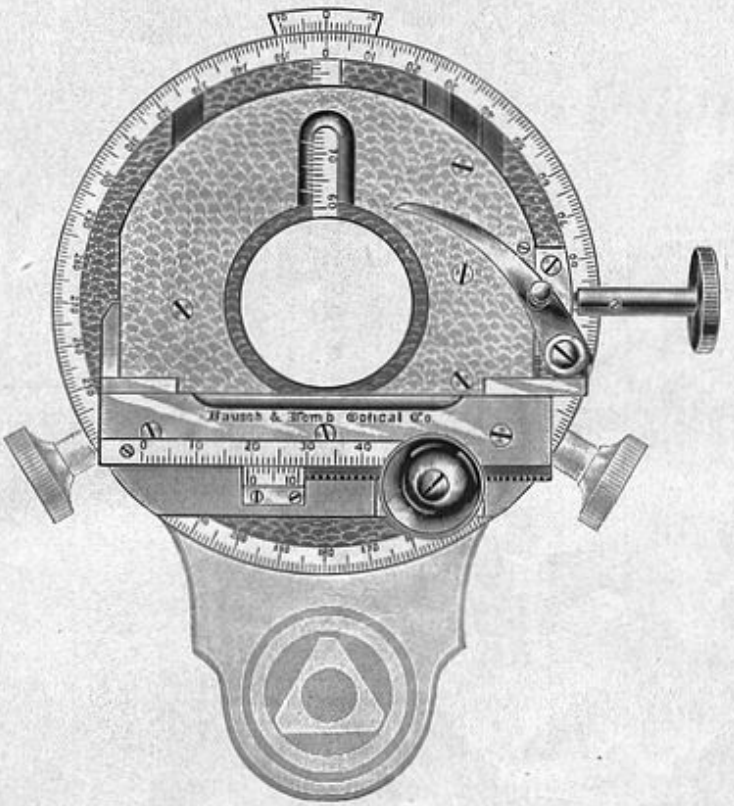

Fig. 6.

The Revolving Mechanical Stage is supplied with the DDS and CCDS Continental Microscopes, and with the K American Type Stand.

The rectangular movements and object carrier are the same in construction as those of the Attachable Mechanical Stage described on the following pages. The graduations are placed so as to be viewed conveniently and have verniers reading to tenths millimeter.

The entire stage rotates on its axis, the circumference being divided into 360 degrees and provided with vernier reading to tenths of a degree.

The whole construction is one of the greatest solidity, combined with delicacy of movements and convenience for working.

When desired for other microscopes than above mentioned, we shall be pleased to give information by letter.