

INSTRUMENTS RECENTLY DEVELOPED FOR OPHTHALMOLOGY

Dr. WALTER H. LANG, c/o CARL ZEISS
Oberkochen, West Germany

1. *Xenon Photocoagulator*

One of our latest developments is the Xenon Photocoagulator. Its predecessor was supplied almost unchanged for 15 years, and all the valuable features of this were retained in the new design. This applies above all to the high-pressure xenon lamp 1600, but also to the number and gradation of the intensity steps and the field stop sizes. We did, however, reduce the weight of the instrument, increase its maneuverability, and further extend its motion range. This was achieved by separating the coagulation unit from the power supply. As a result, instead of having one single, huge, and heavy instrument, one can now set up the power supply unit separate, for example in the adjacent room, if desired. The coagulation unit is thus more easily moved. Moreover, lamp adjustment was simplified and improved to the extent that optimum adjustment of the lamp is ensured for any field stop selected. Thus with the new Xenon Photocoagulator even the smallest field size of 0.5° can be used to advantage.

The newly designed handle with internal wiring deserves also special mention. For prominence coagulation a zoom objective is available. Furthermore, plasma imaging is changed: there is now an intermediate image, and consequently it is possible to install an aperture field stop. The intensity steps are preselected with the aid of the intensity selector close to the handle. The coagulation unit is vertically adjusted with a hand crank.

The stand base has a built-in shot counter with mechanical reset. A timer is supplied on request, which permits coagulation times between 0.1 sec and 5 sec. As with the old instrument, a fluorescence exciter filter is available which can be swung into the beam path automatically if desired.

2. *Motorized operation slit illuminator*

There has long been a pressing need for a high-performance slit illuminator also for examining the patient during surgery. This need has now been fulfilled with a newly designed operation slit illuminator. This equipment is required above all for vitrectomy (in conjunction with the OPMI 6 zoom microscope). Microscopes of the type OPMI 1 or OPMI 6 can also be retrofitted with the operation slit illuminator. With the series-produced version, the curved arm, on which the slit illuminator is adjusted either by motor or manually, has a motion range of $2 \times 30^\circ$. This curved arm is designed for an objective focal length of 175 mm. Adjustment by motor is possible at a speed of $5^\circ/\text{sec}$. The slit illuminator itself is equipped with a 6 V, 25 W lamp. The slit width is variable between 0 mm. and 9 mm. Apart from the free aperture, a blue filter for fluorescence observation and a green filter for contrast enhancement can be used. The slit is rotatable (for examination with a contact glass). With this solution, however, one has to put up with the fact that in center position of the slit illuminator the free working distance is reduced by 43 mm. For this reason a sterilizable slip-on sleeve is envisaged for the slit illuminator.

3. *X-Y coupling with appertaining X-Y foot control panel*

The aforementioned operation slit illuminator is preferably used in conjunction with the X-Y coupling. This coupling is suitable for use with all stands except the counterweight model. The X-Y coupling is adjustable by motor within a range of ± 25 mm. at a speed of 2 mm./sec. It can carry a load of up to 10 kp. Operation of the X-Y coupling (and of the operation slit illuminator) requires an X-Y foot control panel. This foot panel permits vertical coarse adjustment of the stand, operation of the X-Y coupling by means of a joy stick, motorized adjustment of the operation slit illuminator, and, in conjunction with the OPMI 6, microscope focusing and zooming. If desired, the X-Y coupling can of course be controlled by means of a cross switch mounted on the front of the OPMI 6.

4. *Iris fluorescence attachment for slit lamp*

At the suggestion of Professor Friedburg an attachment was designed which is easily retrofitted to any ZEISS slit lam. The attachment is in essence an illumination unit for fluorescence iris angiography. A flash tube like the one used in the fundus camera is mounted on an arm which

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can be swung round the slit lamp axis of rotation. The plasma of this flash tube is imaged onto a field lens by means of a condenser, and the field lens in turn images the condenser aperture on the film to be photographed. In addition to a heat absorbing filter there is a fluorescence exciter filter arranged in the beam path.

This illumination device is fed from a power supply unit, with reduced flash intervals. Even with the highest intensity of 840 Wsec the interval between flashes is only 6.9 sec. (previously 28 sec). With lower intensity steps the interval is even shorter, for example, with 480 Wsec it is merely 0.4 sec.

SUMMARY:

1. Xenon photocoagulation: A variation of the old 1.600 Hertz lamp photocoagulator. It has the following advantages:

a) Easier to handle because of its size, since it is separated from the energy unit.

b) The regulation which assures field precisions of up to 0.5°, is improved and simplified.

c) An intensity selector and a time regulator with a range of 0.1 - 5 sec. are added.

2. Slit lamp for surgery: Through a curved arm it is adapted to a microscope OPMI 6. It has a range of 2 x 30° with an opening graduation of 0 to 9 mm. and contrast filter.

3. Foot pannel designed to use the microscope and the lamp by remote control, with a motor of 10 kp capacity with movements of \pm 25 mm. to 2 mm/sec. for focusing.

4. An accessory for a Zeiss lamp or iris angio fluorescein with flash intervals up to 0.4 sec is presented.

C. G.