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1. Ultrasonic research and development has been carried out since 1949 in the Physical Laboratory of VEB Carl Zeiss, Jena, under the direction of Prof. Dr. Kurt Schuster, formerly a professor at Breslau university. Prof. Schuster's assistant is Dr. (fnu) Trommler; other collaborators in the field are Dr. (fnu) Liebl and Fräulein (fnu) Kadura.

2. Prof. Schuster and his collaborators have developed an "Ultra-sound jar" (Ultraschalltopf) for physical, chemical and biological research. In addition to its usefulness in general research, the device can be used particularly for:

a) Production of stable emulsions;
b) Dispersing solid parts in liquids;
c) Fission of high-polymeric molecules;
d) De-gasification of liquids;
e) Production of liquid smoke (Nebel);
f) Aging of wine and liquor;
g) Medical applications.

3. The ultrasound jar is operated by a high-frequency generator of about 1.5 kilowatts which is produced and delivered to Zeiss by RFT Leipzig. The jar is filled with water in which a container is suspended. The container holds oil, the so-called oil bath. A circular quartz plate is attached in the interior of the container. The diameter of the quartz plate is 8 centimeters. The quartz is of a special but unidentified type. The quartz is protected against damage by a metal membrane. Following are data on the jar:

Sound beam diameter	74 mm
Sound surface	about 40 square cm
Maximum high-frequency voltage at 800 kHz	5 to 6 kV
Maximum HF voltage at 400 kHz	9 to 10 kV
Total height	370 mm
Largest diameter	300 mm
Interior diameter	170 mm

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Maximum height of water.....130 mm
Water content.....about 3 liter
Oil bath.....4.5 liter
Weight when ready for operation.....27 kg.

The ultra-sound is directed upon a cup of 200 millimeter height and an inner diameter of 76 millimeters; the cup has a capacity of 500 cubic centimeters and is placed in a holder (Becherfuss) situated directly over the sound beam. The height of the holder is about 26 millimeters.

4. Following are data on the RFT generator (Ultraschall Industriegenerator Typ 602):

Frequencies.....800 kHz, 2.4 MHz and 4 MHz
Frequency variation.....about plus or minus 10 percent
High-frequency output.....1.5 kW
Ultra-sound output.....about 700 W
HF voltage.....0.5 to 7 kV
Power supply.....net connection 380 V AC, 50 Hz
Tubes.....one RS 207, one EF 12, six OSW 3402

5. Zeiss has delivered a few samples of the ultrasound jar to DDR research institutes; as yet the plant is not in a position to sell it on the **market because of the shortage of quartz suitable for the device. Production** of one quartz plate for the jar requires about one kilogram of quartz.

6. Prof. Schuster and his collaborators have in the past two years carried out research on ultrasonic generators, particularly piezo-electrical ultra-sound generators (quartz, turmaline, barium titanate). They have also done research on ultra-sound generated by electro-acoustic sirens and whistles, magneto-strictive and electro-strictive ultra-sound generators.

7. In 1949, Prof. Schuster, together with Trommler, Liebl and Kadura started to study ultra-sound "photography" according to the "relief procedure" (Ultraschall-optische Abbildung nach dem Reliefbild-Verfahren). The basic idea consists of putting the object to be photographed into a liquid and exposing it to ultrasonic pressure. This pressure together with the effect of gravity causes a rise in the surface of the liquid; this rise depends on the power of ultra-sound. In this manner, the sound picture is transformed into a relief picture. The relief picture is made visible on a screen or ground-glass plate by a Schlieren optical device.