IN THE LABORATORY

A Method for Measuring the Speed of Centrifuges

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The method to be described has been used to measure the speed of rotation of an air turbine.[2] It can be modified, however, to measure the speed of most rotating objects and so may be used in many instances where a tachometer or stroboscope is not readily available.

The principle is very simple and direct: A soot-covered surface is moved parallel to the axis of rotation so that each revolution is recorded; simultaneously, a record of the rate of vibration of a tuning fork is obtained on the same surface. Fig. 1 illustrates the metal frame (in this instance, brass) used

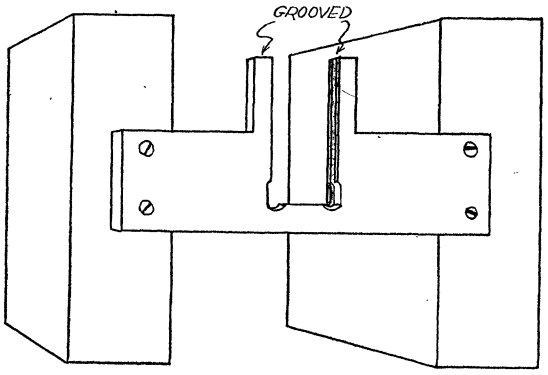

FIG. 1. Frame for holding microscope slide.

to guide the movement of the sooted surface. The two vertical supports are grooved to hold a microscope slide. The horizontal upport is fastened to a wooden block on each end so that the upper surface of the rotor is a short distance below the upper end of the microscope slide when it is in place in the brass frame. For recording, a fiber is glued (using speaker-cone cement) in a horizontal position on the upper surface of the rotor so that it extends $\frac{1}{4}$ inch beyond the periphery. A similar fiber is glued to the tuning fork. The choice of fibers may be varied, but a portion of a bristle from an eraser brush was found to be satisfactory for several tracings. A small length of phosphor bronze wire would be more durable. In order to reduce the deformation of the fiber, since at very high speeds there might be insufficient time for a markedly bent fiber to return to its initial position, a glass rod is sealed lengthwise to the microscope slide with De Khotinsky cement.

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[2] One of the authors (F. R. H.) is indebted to the Faculty Research Fund of the University of Oklahoma for this piece of apparatus.

The tuning fork need not be mounted to make the measurements, although a simple support could easily be made if desired. Both surfaces of the microscope slide (including the rod) are blackened, and it is placed in the metal frame with the rod side toward the turbine. The rotor is started, and the frame is moved close enough so that the fiber just marks on the rod. The tuning fork is started and touched to the plain surface of the slide, which is pulled up out of the frame. Measurements are then made on the two sides of the slide. If one makes both measurements, starting from the marks made before the slide is moved, the tuning fork does not have to be lined up with the fiber on the rotor. No error is introduced by acceleration of the slide. If a more rapid rate of slide movement is required, the frame could easily be modified to incorporate a rubber band or spring to be substituted for hand pulling. Velocities of 300 r.p.s., using a tuning fork of 512 c.p.s., were measured easily without any conscious effort to pull the slide rapidly.

A Biologically Absorbable Surgical Glove Powder

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These investigations were initiated by increasing emphasis in the medical literature (*2*) that talc as a glove powder has serious limitations and that a nonirritating, biologically absorbable substitute might be indicated.

Our experience with the controlled heat denaturation of gelatin (*1*) led us to investigate the possibility of rendering gelatin flour relatively water insoluble yet amenable to *in vitro* proteolytic digestion. Such alteration of the protein molecule might yet leave it susceptible to phagocytosis and hence biologically absorbable by the tissues.

Finely ground gelatin was subjected to electric oven heating at 145° C. for the periods of time indicated in Table 1. The

TABLE 1

PROTEOLYTIC DIGESTION OF PROGRESSIVELY DENATURED GELATIN

Heating time (hrs.)	0	4	20	25	29	45	93
Pepsin digestion time (min.)	10	5	15	25	55	90	135

protein became progressively less soluble in water at room temperature. In addition to nitrogen analysis of the supernatants, a practical test of the relative tackiness of each fraction on the damp hands indicated that solubility approached a minimum after about 25 hours of heating.

The *in vitro* proteolytic digestion of these heat-denatured protein fractions was ascertained as follows: A solution was prepared by dissolving 2 grams of U.S.P. pepsin in 100 cc. of 0.37 per cent HCl. To 100 mg. of the protein was added 100 ml.