AU/mg. This loss in activity was observed when the dilutions for assay were made in 0.9 percent NaCl solution. We have been unable to prevent these losses by making the dilutions in 0.2*M* sodium citrate at *p*H 6, 0.1 percent disodium ethylenediaminotetraacetic acid, 0.5 percent ascorbic acid in distilled water deionized with Amberlite MB-1 resin, or solutions saturated with nitrogen gas. The decrease in activity seems to continue until a specific activity of about 400 to 500 AU/mg is reached. In some preparations the activity had dropped to this level before assays could be completed.

The increase in total units observed following electrophoresis and methanol-ether fractionation has been observed each time one of these experiments has been run. We are not prepared to explain this observation, but a possibility is the separation of a substance that selectively combines with the active group of angiotonin.

Paper chromatography (*8*) of the acid hydrolyzate of this sample (No. 221-194B-74-5) showed the presence of the following amino acids: Asp, Glu, Gly, His, Ala, Pro, Ser, Tyr, Val, Thr, Phe, Leu, Ileu, Arg, and Lys. These results differ from those reported by Bumpus and Page (*9*) in that we have found threonine, and differ from Edman's (*4*) data in including threonine, phenylalanine, and arginine.

Paper chromatography (*8*) of the ether soluble and nonether soluble fractions of the acid hydrolyzate of the dinitrophenyl (DNP) derivative (*10*) showed the presence of ε-DNP lysine only. We are thus unable to confirm the observation (*9*) that angiotonin has a free amino group on aspartic acid.

An attempt to repeat this preparation differed from the first series of experiments in two ways: (i) the countercurrent distribution step was eliminated, and (ii) the electrophoresis was run in acetate buffer made up in a 0.1 percent ascorbic acid solution in deionized water. In this preparation (No. 221-194B-168-2) 2800 lit of hog blood gave 21.5 mg of angiotonin with a specific activity of 13,500 AU/mg.

These experiments provide evidence that angiotonin may be purified to obtain preparations of greater activity than hitherto reported. The marked instability of the highly purified preparations and the deterioration to a residual activity of about 500 AU/mg have not been explained. These observations suggest that caution be exercised in the interpretation of results of earlier purification efforts.

References and Notes

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7. We wish to thank E. O. Davisson and H. W. Fisher for performing the electrophoreses.
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21 October 1954.

Communications

Some Glass Apparatus Improvements

Explained and illustrated in this report are some improvements in design of several existing models of laboratory glass apparatus. These items of apparatus include solid-absorbent drying tubes employing sintered glass disks for a gas passage and an improved version of the standard Ten Broeck glass homogenizer. These units, shown in Figs. 1 and 2, have been used successfully in this laboratory within the past year.

Use of sintered glass disks in permanently sealed solid-absorbent drying tubes. An essential item found in many modern instruments is a container filled with anhydrous silica gel mounted strategically near a moisture-sensitive portion of the instrument. The container has to permit perfect access of the adjacent air for thorough drying by the silica gel and is usually easily detached for drying the spent agent. To avoid the necessity of emptying old drying agent and replacing with fresh gel, it is convenient to seal the gel in a tube equipped with sintered glass ends of the proper porosity which will permit the free passage of gases through the silica gel without the danger of tiny particles of the gel entering the remainder of the system.

Several models of such containers, designed for general application, are shown in Fig. 1. Tube *A* is of the standard form used for drying gases. The bulge represents the site of the opening used as an aid in initially filling the tube and later sealed off. Tube *B* represents a straight variation of this model, while tube *C* is a representative model used for drying stationary volumes of gases inside such moisture-sensitive instruments as the Beckman spectrophotometer and alpha-particle counting chambers.

The great advantage in the use of these tubes with the agent sealed in place is that the entire tube can be placed in an oven for drying the spent agent and then replaced in its original location. This completely eliminates the need for handling additional amounts

of silica gel. The changing process can, in addition, be made quite rapid if several of these units equipped with the proper connectors are always available for rapid exchange with a spent unit. These tubes are applicable for use with any of the solid absorbents, such as granulated charcoal, in addition to silica gel.

Cooling jacket for motor-driven Ten Broeck glass tissue grinder. While preparing homogenized tissues it has been found convenient to keep the preparation cold by circulating cold fluid in an outer jacket that is fused to a Ten Broeck glass homogenizer, as is illustrated in Fig. 2. For some procedures tap water is cold enough, for others ice water or alcohol cooled in Dry Ice may be used as the cooling agent. The pestle may be attached to a stirring motor by means of a heavy rubber tube placed between a "hose-connection" on the pestle and the chuck of the motor. It is possible to observe the homogenizing process through the jacket. Rubber tubing connections permit movement of the jacketed portion of the homogenizer in an up-and-down motion over the pestle fixed in the motor.

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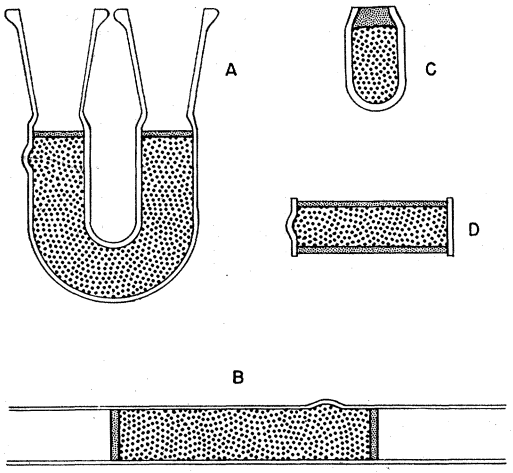

Fig. 1. Various types of permanently sealed solid-adsorbent drying tubes employing sintered glass disks.

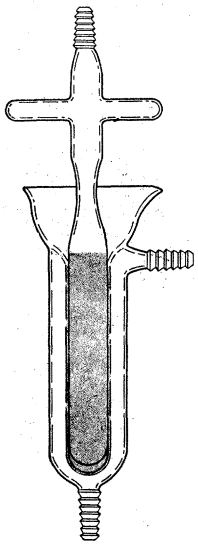

Fig. 2. Cooling jacket for motor-driven Ten Broeck glass tissue grinder.

A Defense against New Ideas

I was flattered to see that my prewar dictum "There is no adequate defense, except stupidity, against the impact of a new idea" was still considered sufficiently relevant to justify printing [*Science* **120**, 963 (1954)]. However, recent events, in particular the leading article in the same number of *Science* by the board of directors of the AAAS, suggest that the dictum is outdated. I should like to amend it to read: "There is no adequate defense, except stupidity or a clumsy security system, against the impact of a new idea."

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Cycle Analysis through Industry Study

In March 1953 (*1*) I presented figures for the period 1922–30 to show that a fall in profit rate is followed by a decrease in the rate of investment. The figures given were based on totals for all United States corporations, without classification. The result is much clearer when the corporations are taken in industry groups (*2*).

Of the total increase of $54.0 billion in tangible corporate capital during the period 1922–30, $31.4 billion, or 58 percent, is represented by the utility sector, including transportation, and the service sector, including hotels, restaurants, entertainment, and so forth. Taking fixed capital only—that is, land, buildings, and equipment—the corresponding percentage is 66; in other words, two-thirds of the total increase in fixed capital for the entire corporate economy during that period occurred in its utility and service sectors. Of these two sectors, the service sector was relatively small. In either capital or earnings, more than nine-tenths was represented by the utility sector.

The net earnings of these two sectors of the corporate economy from operations, before deduction of interest paid but after deduction of taxes, so as to represent, comparatively, the net earnings on total tangible capital, are shown in Table 1, computed as a percentage of such capital; in addition, bond yields of the utility sector are also given for comparison (*3*). As the figures show, the earnings of both sectors held to a 6-percent level or better for the years 1922–26, inclusive, and then dropped to a new and fairly consistent level almost 1 percent lower. Bond yields dropped also but not to the same extent, so that the