such as choroiditis and retinitis with attendant vascular thrombosis, gross changes in vision associated with parallel changes in the size of the vessels of the eyegrounds have been demonstrated. They have been induced by galvanization—negative galvanization causing dilatation of the vessels and marked improvement in vision, and positive galvanization causing constriction of the blood vessels and diminished vision. I have thus found it possible in these cases to improve sight or to reduce vision almost to the point of blindness, at will, by means of galvanic stimulation. The reversible improvement and impairment of vision as a result of dilatation and contraction of the vessels by galvanization, offers proof of the quantitative dependence of the sensation of vision upon the vascularity of the eye. In a number of cases with rapidly failing vision, it has been found possible, by means of galvanic therapy, to improve the sight of the subject to a useful level and to maintain at that level for long periods of time.

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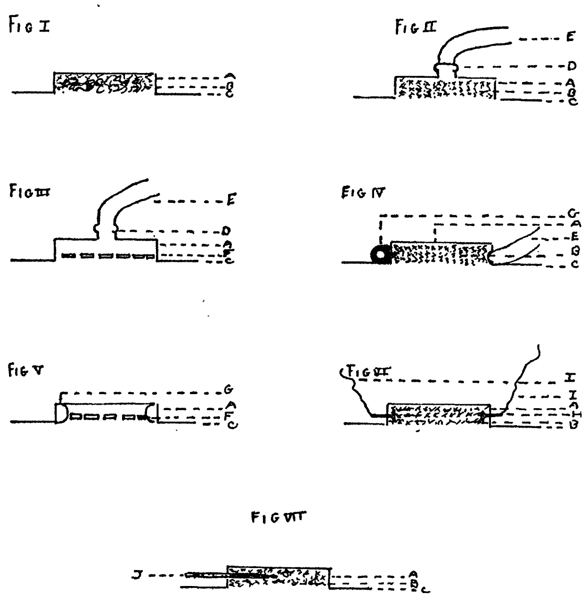
ABSORPTION DEVICES AND METHODS

THE devices and methods for the collection of sweat thus far improvised are somewhat complex. In addition there are many extraneous forces which might influence the collection. For example, sweat collected from an individual placed over a rubber sheet is subject to contamination by secretions other than those from the skin. An arm surrounded with a jacket subjects the part to abnormal production. Sucking up sweat by a syringe is cumbersome and although it is of little value for quantitative estimation, good qualitative results are obtained.

The author proposes other means and methods for the collection of sweat for qualitative and quantitative estimation. It is our opinion that the perspiration of an individual is a very important factor in his well-being and that any practical method for the collection and estimation of the amount secreted in the various parts of the body should have great prognostic and diagnostic value. First, however, it is necessary that the method be simple and accurate and furthermore, that the apparatus be so constructed that it may be applied to any part of the body over a measured area of skin or mucous membrane. The logical method of accomplishing such results presents itself in the form of a chemically inactive but efficient absorbent which can be placed in a cup (made of chemically inert material), the opening of which has a definite known area and which opening can be apposed to a given skin surface. This cup can be constructed of varying shape and size so as to fit the site to which it is to be applied. Likewise the absorbent is cut so that it fits snugly over the area. In order that the quantitative results may be estimated, the absorbent is weighed before and after applying to the skin surface and the time of application noted. For qualitative estimation it is necessary to know the chemical composition of the absorbent, to extract the absorbent, test the extract qualitatively and therefrom compute the results.

It must be realized that normally the amount of sweat secreted varies with the metabolism of the individual, the construction of the skin, the part of the body, the temperature and humidity of the environs, the circulation of air, the cleanliness of the parts, the type and amount of clothing, the diet, etc. We must also note that sweat will vary qualitatively and quantitatively in certain pathological conditions. In addition, sebaceous glands, epithelium and the predominant type of sweat gland will influence the composition of sweat in the different parts and under different conditions. In order that all factors be taken into consideration it is necessary that the cup containing the absorbent be varied in construction and that the methods be altered so as to fit the need.

For the above reasons the author has illustrated the simple and altered types of cup with absorbent. The cup in each case can be fastened to the skin surface by adhesive, belt, elastic or whatever means may best suit the part to which it is to be applied. We first used vaccination shields, the holes of which had



been closed and the shields varied to suit the occasion. Specially prepared and analysed J. & J. cotton was the absorbent used. The absorbent was cut to the circumference of the cup and was weighed before and after application and the difference and time noted.

DESCRIPTION OF DEVICES:

Fig. I—Cross-section: A is the cup, B the absorbent and C the flange which fits to the surface.

Fig. II—Cross-section: A is the cup, B the absorbent, C the flange, D the neck of the cup and E a tube leading from the neck which can be secured to the same either by threads or other suitable means or can be made continuous with the cup. The purpose of the tube E is to produce pressure or vacuum in the chamber by its being connected to a pump or other device for that purpose.

Fig. III—Side view: A is the chamber, C the flange, D the neck of the cup, E the tube leading off from this neck and F are apertures in the side of the cup. In this cup is contained the absorbent. E is connected with a suction or pressure device. This method produces a circulation of air in the cup because of the apertures F. The cup may be constructed with an additional part so that the apertures can be closed and in that way its purpose will be identical with that of Figure II.

Fig. IV—Cross-section: A is the cup, B the absorbent, C the flange, E is a tube connected to a channelway G running around the cup and opening into the cup by means of slits. The tube E can be connected with a pressure or a vacuum device so as to produce negative or positive pressure in the cup or there may be holes in the top of the cup so that a circulation of air is produced. The top may be so constructed that holes in it can be opened or closed.

Fig. V—Side view: This is a side view of Fig. IV in which A is the cup, C the flange, G the channelway around the cup and F openings from it into the cup.

Fig. VI—Cross-section: A is the cup, B the absorbent, H an electrode imbedded in the absorbent and I the wires leading from the electrodes. The principle of this device is to measure the conductivity through the absorbent as the perspiration is being absorbed.

Fig. VII—Cross-section: A is the cup, B the absorbent, C the flange and J is a thermometer. The principle of the thermometer is to measure the temperature change in the absorbent. In this case the cup can be made of non-heat conducting material as desired.

The measurement of the amount of sweat in a given length of time and from a given area under similar and varying conditions is the aim of the above devices and procedures. The additional factor that the devices described are simple, easily applicable over a given area from which sweat is desired, and the estimations are not complicated should add to their practicability and assure their early usage. Certainly this procedure is less complex than many which are daily routine in the well equipped hospitals of to-day. In a later paper the author will discuss variation in the secretion of sweat under diverse conditions.

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DOUBLE PLATE METHOD USED FOR CULTURING TILLETIA LEVIS

A NEW procedure has been followed whereby pure cultures of *Tilletia levis* may more easily be made. The bottom of a petri dish is covered with a two per cent. potato dextrose agar and allowed to cool until all the moisture is gone from the top of the plate. Then the top of the dish is poured with a three per cent. non-nutrient agar somewhat cool. The agar is poured in the center of the lid until an area about one and one half inches in diameter is covered.

Streaks of sterilized smut spores are made across the non-nutrient agar with a loop needle. These are then incubated for ten days at 12° to 14° C.

As is well known, the sporidia of *Tilletia levis* are ejected from the sterigmata and in the double plate they fall to the nutrient agar below where they can be picked off singly or grown into multisporidial cultures free of contamination.

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SPECIAL ARTICLES

INBREEDING IN ALFALFA ESTABLISHES A HIGH DEGREE OF HOMOZYGOSITY[1]

A PREVIOUS report[2] of alfalfa-seed investigations at the Utah Station indicated that about 2 to 2.5 times as many pods were set when artificial tripping was practiced. A considerable number of pods developed from flowers which showed no evidence of having been tripped.

An inbreeding experiment of considerable proportions, the data from which are just now available[3] make clear that alfalfa in one of the famous seed-growing areas in the Uintah Basin, Utah, is much less heterozygous than has been thought. As conducted, the experiment did not establish what proportion of the seed pods developed under conditions of natural self-fertilization. Although this would be difficult to

[1] Contribution from Department of Agronomy, Utah Agricultural Experiment Station. Publication authorized by director, June 15, 1931.

[2] Carlson, J. W., "Artificial tripping of flowers in alfalfa in relation to seed production," *Jour. Amer. Soc. Agron.*, 22: 780–786 (1930).

[3] Carlson, J. W., and Stewart, G., "Alfalfa-seed production," Utah Agr. Exp. Sta. *Bul.* 226 (1931).