conditions of the Elson-Morgan test, but a considerably more intense color is obtained if sodium hydroxide is used in place of sodium carbonate. Glucosamine, on the other hand, fails to give any test if sodium hydroxide is used.

This test was used in the analysis of clinical preparations of streptomycin. Samples of high purity gave reasonably good results, but as the purity of the samples decreased, the results became high and in some instances were as much as 200–400 per cent higher than those expected from the microbiological assay (see Table 1). It is therefore apparent that interfering substances are present in clinical preparations of low potency.

TABLE 1

COMPARISON OF VALUES OBTAINED ON CLINICAL SAMPLES OF STREPTOMYCIN BY MICROBIOLOGICAL ASSAY (3) AND BY THE USE OF THE MODIFIED ELSON-MORGAN TEST

Bio-assay (units/mg.)	Colorimetric assay (units/mg.)	Bio-assay (units/mg.)	Colorimetric assay (units/mg.)
700	750	600	748
705	745	500	700
800	850	390	710
720	725	300	560
750	730	230	900
705	720	115	250
615	600		
770	795		
840	775		

Efforts to remove the interfering substances by selective adsorption methods were made without success. It was observed, however, that the ability of pure streptomycin to give the color test was rapidly lost upon pretreatment with alkaline borate buffer of pH 12 at 100° C. (15.26 grams of $Na_2B_4O_7 \cdot 10H_2O$ and 120 cc. of 1 *N* NaOH diluted to 1 l. with distilled water). The color test of pure streptomycin decreased 90 per cent after 5 minutes, and the destruction was essentially complete after 10 minutes of heating. If a clinical sample of streptomycin of intermediate potency (200–600 units/mg.) is treated under these conditions, destruction proceeds first at a rapid rate approximating that found for pure streptomycin; but after 10 minutes heating, at which time the sample was shown to be devoid of streptomycin activity microbiologically, a second and much slower rate became apparent.

Extrapolation of the rate of destruction of this impurity to zero time permitted estimation of the impurity. The difference of this value and the total value obtained before alkali treatment was expected to correspond to the true streptomycin content of the sample. Values corresponding to the microbiological assay could be obtained on a number of low-potency samples. However, on some samples the values remained high, indicating the presence of other impurities behaving like streptomycin.

The use of the modified Elson-Morgan reaction will give useful results on highly purified streptomycin samples and can be used as a sensitive method for the estimation of N-methyl-l-glucosamine. The differential procedure improved the analytical data obtained with some low-potency samples, but with other samples high analytical values were still obtained.

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Relation of Vapor-Pressure Deficit to Evaporation From a Spherical Atmometer in an Air-conditioned Room

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Ecologists, hygienists, and others interested in the direct measurement of evaporativity by means of the 5-cm. porous-porcelain atmometer sphere are frequently confronted with questions concerning the relation of measured evaporation intensities in calm and shade to air temperature and air humidity, or to vapor-pressure deficit. Of the many different forms of atmometers proposed from time to time under various names and by various writers (*2*), the 5-cm. hollow white porous-porcelain sphere with standardization coefficient of about 0.78 is generally most satisfactory in the absence of frost (*3*). Its moist, spherical surface, without any superficial film of water, gives constant and uniform exposure in all directions excepting below, where the narrow cylindrical neck connects with the supply tube, through which distilled water rises by suction from a reservoir at a convenient lower level. Black spheres are useful when sunshine or other intense radiation requires special consideration.

To care for slight variations in the size of these spheres, each reading is multiplied by the standardization coefficient of the sphere used. When a sphere becomes soiled by dust or other contamination through use, its coefficient generally increases, but it may sometimes decrease, and restandardization is in order whenever considerable soilage is suspected. Soiled spheres may be reconditioned by cleaning; if they are reground, the new coefficient should be slightly greater than the original one.

Although spheres with an original coefficient of about unity (instead of about 0.78) might be produced (external diameter, about 4.4 cm. instead of 5 cm.), the many published evaporativity records based on the 5-cm. instrument render it undesirable to introduce a smaller sphere, exposure of which to sunshine and air currents would naturally differ from that of the 5-cm. sphere in several ways other than with respect to extent of exposed surface.

While the corrected rate of evaporation from a standardized atmometer depends upon prevailing vapor-pressure deficit, air movement, and radiation, rates at stations in calm and shade may be taken to be essentially proportional to the prevailing deficit; under these conditions air movement and radiation effects may be left out of consideration. The value of the deficit, D, at any time may be computed from the current relative humidity, H, and the standard vapor tension, T, for the current temperature, since $D = T\ (1-H)$. But the average value of D for a period is not to be satisfactorily derived from the corresponding average values of T and H unless at least one of them is maintained throughout the period. When both are maintained, the value of the deficit is naturally also constant throughout the period.

This paper reports the result of a 12-month series of weekly observations on the performance of a standardized 5-cm. white atmometer sphere (with coefficient of 0.78), freely exposed under conditions of shade and calm in an indoor storage space with air temperature and relative humidity (and also vapor-pressure deficit) automatically well maintained, at about 70° F., 50 per cent, and 9.29 mm. of mercury column, respectively. The almost constant daily corrected rate of evaporation from the instrument was found to be 15.5 ml., and the ratio of this value to the nearly constant value of the deficit is about 1.668. This new calibration characteristic of the standardized sphere should be essentially correct generally for air conditions of shade and calm, especially indoors, as in homes, offices, and workrooms without considerable radiation or air currents. It may be useful also in comparative studies on outdoor evaporativity.

Our observation period extended from October 1937 to September 1938. The instrument, with bottle reservoir and without nonabsorbing valve (*1*) stood in an air-conditioned storage room in Cleveland, Ohio, kindly placed at our disposal by the National Carbon Company. Each weekly reading was first multiplied by 0.78, the standardization coefficient of the sphere used. From the resulting corrected weekly rates the average corrected daily rate for each of the 12 months, October to September, was then computed as follows: 15.8, 15.7, 14.6, 15.9, 15.4, 16.3, 15.4, 15.0, 15.5, 15.5, 14.8, 16.1 ml./day. For the whole period, the average rate was 15.5 ml./day, or 0.646 ml./hour, and the range of fluctuation from month to month is seen to have been narrow—between extremes of −6 per cent (December) and +4 per cent (September).

Close agreement among the monthly averages constitutes clear evidence that the air-conditioning of this room was remarkably efficient. The automatic temperature and humidity controls were set to maintain air temperature of 70° F. (21.1° C.) and a relative humidity of 50 per cent. Doubtless there was some insensible air circulation at all times, but air movement was not noticeable. Standard vapor tension for 21.1° C. is 18.58 mm. and, since the room air was always about half saturated, the prevailing vapor-pressure deficit was about 9.29 mm. Consequently, the ratio of the value for average daily evaporation rate to that for average deficit is 15.5/9.29, or 1.668. Based on the average hourly rate, this ratio value is 0.0695.

The air temperature of the room used (70° F.) was lower than is usual for artificially heated homes and offices in this country, where 72° F. is often regarded as most satisfactory for the comfort of sedentary occupants. Many short-period tests, carried out at Baltimore with standardized 5-cm. spheres, have indicated that a high degree of winter comfort is often attained in homes and offices with calm air at about 72° F., corrected evaporation rates about 0.75–0.80 ml./hour, humidity about 45–42 per cent, and deficit about 10.8–11.5 mm. To secure such winter conditioning in the region of Maryland, Ohio, etc., artificial humidification of some kind is, of course, generally necessary, especially in periods of coldest weather.

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A Simple, Rapid Technique for the Study of the Action of Hydrolytic Enzymes on Insoluble Substrates

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For the study of the enzymatic digestion of catgut a very simple technique has been used (*1, 2, 4*) for determining the end point of the reaction as indicated by the complete loss of strength of the suture. In this procedure a suitable weight is attached to the suture, which is in turn immersed in the enzyme solution. The falling of the weight resulting from the