daily ½ ml of supplement S–8, a 20 per cent. ethanol solution containing per ml 80 γ each of thiamine hydrochloride, riboflavin and pyridoxine hydrochloride, 1 mg each of calcium pantothenate, nicotinic acid and inositol, and 6 mg of choline chloride. When definite graying of the fur had become apparent, 70 animals received a second daily supplement, namely 1 ml of preparation X–1, a 20 per cent. ethanol solution containing 3 mg/ml of p-aminobenzoic acid (E. K. #14, M. P. 182–4 with decomp.). A bluish discoloration of the skin, a typical first sign of growth of normally pigmented hair, was seen in from two to three weeks and black hair appeared within a month. The 30 control animals, not receiving supplement X–1, continued to show typical achromotrichia.

Chicks reared on the heated vitamin K-deficient ration, recently described,[5] were found to show only a small gain (less than 100 gm) in weight and to die within about a month, even when ample amounts of calcium pantothenate and of the vitamin K-active 2-methyl-1,4-naphthoquinone were fed. However, the addition of 300 γ of p-aminobenzoic acid per gm of ration resulted in better growth and longer survival times. In fact, 78 of 93 birds are still growing at the end of the second month and showed gains in weight of as much as 300 gm in spite of the severe dermatitis symptoms similar to the ones recently described by Hegsted *et al.*[6]

The experiments to date seem to permit the conclusion that p-aminobenzoic acid is one of the factors of the vitamin B complex. Detailed data will appear elsewhere.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A METHOD FOR MEASURING THE AREA OF SMALL IRREGULAR SURFACES OF THE HUMAN BODY

THE methods[1, 2] previously described for measuring the area of parts of the human body are satisfactory for large or fairly regular surfaces. The area of a small irregular surface such as the pinna of the ear can not be accurately learned by these procedures. The method to be described proved satisfactory for such an area.

Brass plates of known areas, 4 and 10 sq. cm., were covered with a single layer of small lead discs of uniform diameter and thickness (1.02 mm diameter and 0.69 mm thickness) so placed as to reduce bare space to a minimum and held in place with petroleum jelly. The discs were removed, washed free from the jelly and weighed with an accuracy of 0.1 mg. The weight of lead discs necessary to cover one square centimeter could then be calculated. From five separate such measurements 0.601 gm of the discs was found to cover one square centimeter of flat surface. A brass model of known area and similar in shape to the postero-superior portion of the pinna was constructed. The surface of the model was covered with the lead discs and the weight of these discs measured. From the weight of these discs the area of the model was calculated with an error of no more than 2.8 per cent.

A negative cast of the postero-superior portion of the pinna (the part studied is illustrated in Fig. 1) was made of a resilient moulage, Negocoll.[3] Positive casts of dental stone[4] were then made. The positive casts were covered with the lead discs. From the weights of the discs necessary to cover the casts the surface areas were calculated. Duplicate measurements were made in each case. The value of the dupli-

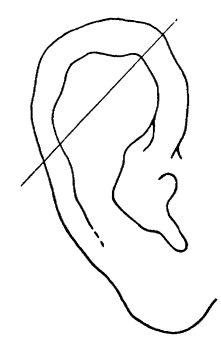

FIG. 1. Right pinna. Part of pinna studied is that part above the oblique line.

TABLE 1

AREAS OF THE POSTERO-SUPERIOR PORTION OF THE PINNA OF FIVE NORMAL WHITE ADULTS

Subject No.	1	2	3	4	5
Sex	F	M	M	M	M
Age	50	27	30	32	40
Weight of the discs (gm)	13.60	13.28	13.21	13.02	13.86
Area (sq. cm)	8.168	7.981	7.944	7.826	8.319

[5] S. Ansbacher, *Proc. Soc. Exp. Biol. and Med.*, 44: 248, 1940.

[1] E. F. Du Bois, "Basal Metabolism." 3rd ed. Lea and Febiger, Philadelphia, 1936.

[2] H. Isbell, "The Human Finger Tip: Surface Area and Volume Correlations." *Human Biol.*, 11: 536, 1939.

[6] D. M. Hegsted, J. J. Oleson, R. C. Mills, C. A. Elvehjem and E. B. Hart, *Jour. Nutrition*, 20: 599, 1940.

[3] A proprietary preparation of Kern Company, New York City.

[4] Albastone—a preparation of S. S. White Dental Manufacturing Company.

cate measurements agreed within 3 per cent. (Table 1).

The method as described for measuring the area of a portion of the pinna is applicable to other irregular surface areas as well.

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MELTING POINT APPARATUS

FOR years the senior author has sought for a melting-point apparatus that could be assembled from standard stock glassware and that would yield dependable results with the minimum of effort. We find the following design meets these requirements and possesses certain definite advantages. For example:

(1) A triple-wall air bath is used, minimizing errors due to heat losses and eliminating inflammable or corrosive bath liquids.

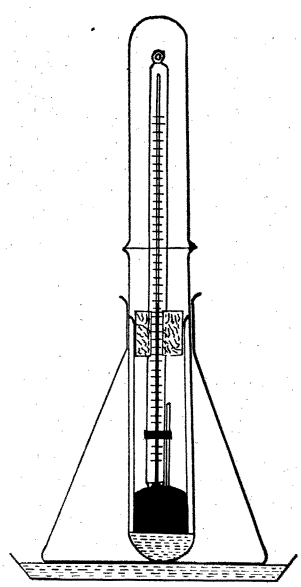

FIG. 1

(2) The thermometer is entirely enclosed, thus obviating uncertain stem corrections.

(3) No stirrer is required.

(4) By surrounding the thermometer bulb with mercury the same temperature is insured for both thermometer and capillary melting tube.

(5) The low cost permits duplication of units to meet the needs of any laboratory.

The apparatus consists of a 250 ml E. flask, pyrex, fitted with a 25 × 200 mm pyrex test-tube, selected so that it will barely pass through the neck of the former, through which it is inserted. A pinch of fine sand is put in the bottom of this test-tube, on which rests a second pyrex test-tube, 18 × 150 mm. The small test-tube contains fifty grams of mercury. In its mouth is a one-hole cork slotted so that the thermometer can be read over the entire scale. A third test-tube 25 mm in diameter is chosen of such length that it will accommodate the thermometer when placed over it to form a closed chamber with the first tube.

A strip of transparent Cellophane tape holds the two test-tubes in alignment. A shallow sand-bath is placed under the flask. The capillary melting tube is adjusted so that the top of its contents extend 1–2 mm above the mercury level, just opposite the thermometer bulb.

The following are typical results, using a stock thermometer:

Benzoic acid, C. P., Eimer and Amend, marked	122
Found	121.7
	121.9
Hydroquinone, Eastman developer, Literature	171.
Found	169.5
Catechol, Merck, resublimed, Literature,	104, 105.
Found	104.2

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