taneous determinations the impedance of the human body to direct current fell 13.7% and to high frequency current 0.93%. In other words, the impedance of the body to high frequency current remains practically constant during the psycho-galvanic reflex. By means of a special switch we were able to determine the high frequency impedance or true resistance of the body, and then without disconnecting the bridge, by using a current of 1000 cycles per second and taking the value of the true resistance as constant, to determine the polarization-capacity of the skin. Polarization capacity is a capacity in parallel with a resistance; for example, in one determination, the high frequency impedance was 900 ohms, and the polarization-capacity of the resting skin was 0.035 micro-farads and 10,000 ohms. On stimulating another part of the body with a painful stimulus, the polarization-capacity changed to 8,800 ohms and 0.0357 micro-farads. Erroneous results are arrived at when collodion is used to mark out the area of skin measured, and this explains the erroneous idea that change is due to stretching of the skin. We used 2 adjacent fingers immersed in liquid electrodes and vaseline was used to mark out the area.

4639

Use of Visking Sausage Casing for Ultrafiltration.

FRANK C. ANDRUS. (Introduced by J. F. McClendon.)

From the Laboratory of Physiological Chemistry, University of Minnesota, Minneapolis.

Visking sausage casing is impermeable to native proteins but permeable to proteose. Three-fourths inch casing will not stand a pressure exceeding the osmotic pressure of blood colloids but one-half inch casings may be obtained. Ox blood serum diluted with one volume of water and saturated with toluene, was filtered through three-fourths inch casing by tying one end and sealing it with collodium and coiling 10 feet in an oval aluminum tray covered with a metal top sealed with vaseline. Two feet of the casing protruded from a hole in the cover and was supported vertically. The casing was filled with the serum and the pressure adjusted by the height of the vertical portion containing serum. A number of cc. per hour were filtered by a pressure little in excess of the osmotic pressure of the proteins. The ultrafiltrate contained the same con-

centration of chlorides as the serum, 70% of the calcium and 60% of the total phosphorus. The last 2 figures might have been different if the serum had not contained some albumose.

4640

Basal Metabolic Rate and Surface Area of Children.

D. A. COLLINS. (Introduced by J. F. McClendon.)

From the Laboratory of Physiological Chemistry, University of Minnesota.

Owing to the fact that R. E. Scammon had determined the surface area of many of the children in the Institute of Child Welfare, the basal metabolic rates of these children were determined. The measurements made by the Tissot-Haldane method were rejected, partly because there was no graphic record and irregularities in breathing could not be eliminated. The following determinations were made with the Benedict-Collins apparatus. The metabolic rates were not determined on the same days that the surface areas were measured by means of plaster casts and rates were determined on some children whose surface area was not measured directly. Boyd's and Scammon's formula (surface area $= 994.5\ W^{0.718}$) was found by them to apply to these children and, therefore, it is certain that a correct estimation of their surface area was made on the same day or within a very few days of the metabolic determinations. Therefore, these determinations are of special value as standards. Rates were determined successively on the same child several times a week. During some of the determinations muscle movements were observed and if these are eliminated the averages are as follows:

	Age		Cal. per sq. m.	
	Years	Months	per hour	
Males	3	3.5	52.2	
	4	7.5	56.2	
	4	11.5	49.4	
	5	— –	60.6	(Slight movements of the hands)
Females	5	1	48	
	5	2	51	