hol, cooled and centrifuged, and diluted with 1% NaCl solution. The potency was determined by the method of Allen and Doisy.[2] The weight of the non-volatile residue (a thick yellow oil) was determined and the weight per mouse unit calculated.

The results were as follows:

| | Mouse units per liter | mg. per mouse unit |
|---|---|---|
| Urine, untreated | 200-400 | 0.05-0.20 |
| $Ca_3(PO_4)_2$ adsorbate | 100-200 | 0.13-0.40 |
| Residual urine | 100-200 | 0.06-0.26 |
| $Ca_3(PO_4)_2$, double quantity | 200-400 | 0.08-0.16 |
| Cellulose adsorbate | 100-200 | 0.56-2.83 |
| Residual urine | 100-400 | 0.05-2.52 |

The results indicate that the hormone may be adsorbed quantitatively by calcium phosphate.

## 4638

## The Psycho-galvanic Reflex and Polarization-Capacity of the Skin.

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It has been shown by Gildemeister that the physiological change in the skin constituting the psycho-galvanic reflex, is a change in polarization-capacity localized in the sweat glands. Those experimenters who offer other mechanisms of the reflex have worked with inadequate apparatus. We made a study of polarization-capacity, first of metal electrodes and secondly of the surface of red blood corpuscles. In order to distinguish between resistance and polarization-capacity we measured the resistance by means of a new Wheatstone bridge and an alternating current of one and a half million cycles per second. We are able to show that the resistance of the body does not appreciably change during the psycho-galvanic reflex. We devised an apparatus whereby the impedance of the body to direct current and high frequency current could be determined simultaneously, using a condenser to shield the high frequency current from the direct current and a choke coil to shield the direct current from the high frequency current. In an average of 10 simul-

[2] Allen, E., and Doisy, E. A., *J. Am. Med. Assn.*, 1923, lxxxi, 819.

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.

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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-