Table 3

	Height of second wave in mm. (from cobalt wave)
Fasting	60
3 hr. after fatty meal	66
5 min. after 0·5 ml. of heparin *in vitro*	42
5 min. after 5 ml. of 1 per cent protamine *in vitro* (that is, 10 min. after heparin)	55
Fasting	54
5 min. after 5 ml. of protamine	56

following heparin administration is also quite striking (Table 3).

Protamine given by itself does not show any effect. The *in vitro* effect of heparinized individuals on lactescent blood serum can also be demonstrated by this method. Since the existing methods of studying heparin-induced lipolysis are rather tedious and cumbersome, the method reported here may prove of some value. A considerable advantage for the physiological application of this method is the minute amount of blood serum required for polarographic measurements.

The mechanism of the phenomena described and the results of their application in the study of the physiology and pathophysiology of lipid transport will be reported in detail elsewhere.

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Osmotic Pressure in the Intestine of the Cow

Many investigations of the osmotic pressure in the intestine have been carried out. In those performed on laboratory animals it always turned out that, in the small as well as in the large intestine, there is isotony with the blood.

In our investigation the osmotic pressures of the press-juice of the faeces and of the intestinal content of the cow have been determined. The faecal juice was obtained by pressing the faeces in a membrane press. The freezing-point depression method was used for measuring the osmotic pressure.

With fifty cows the mean value of the freezing-point depression in the press-juice of the faeces appeared to be 0·350 deg. C., the extremes being 0·240 and 0·430 deg. C. The freezing-point depression of the cow's blood is 0·560–0·590 deg. C. The press-juice of the cow's fæces is therefore rather strongly hypotonic with regard to the blood. From the data in the literature, however, isotony with regard to the blood had been expected.

Table 1

	Freezing point depression (°C.)
Experiment 5	
b, rennet-stomach (abomasum)	0·549
a, duodenum	0·684
c, middle small intestine	0·714
j, caecum	0·620
h, beginning of large intestine	0·530
f, middle of large intestine 1	0·489
g, middle of large intestine 2	0·449
d, end of large intestine	0·398
Experiment 6	
f, rennet-stomach (abomasum)	0·490
a, duodenum	0·588
b, middle of small intestine 1	0·951
c, middle of small intestine 2	0·822
d, end of small intestine	0·628
n, caecum	0·606
m, beginning of large intestine	0·549
l, middle of large intestine 1	0·388
k, middle of large intestine 2	0·364
j, middle of large intestine 3	0·339
g, end of large intestine	0·375

Afterwards, with six cows, the osmotic pressure in different parts of the intestine was determined. In Table 1 the results of two of these determinations are given.

The content of the abomasum is slightly hypotonic with regard to the blood. In the small intestine, however, mostly rather strong hypertony occurs; but in the end of the small intestine and in the caecum isotony with regard to the blood is practically re-established. In the large intestine the contents gradually become hypotonic. It is clear that this last-mentioned fact may be of great importance for the mineral balances and the mineral metabolism of the cow.

We conclude, therefore, that the generally accepted tendency of the intestinal content towards isotony with the blood does not hold for the cow.

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Deficient Water-binding in Pathological Horny Layers

The pathogenesis of most scaling skin conditions is obscure. Although it has been often assumed that abnormal processes of keratinization play a major part, recent work has emphasized the importance of the water-soluble components of the horny layer. These components contribute to the water-binding ability and pliability of the normal skin surface[1]; their amounts are reduced in psoriatic scales[2] and skin[3].

We have determined the water-uptaking capacity at 100 per cent relative humidity and the amino-nitrogen content of normal horny layer (callus) and of scales from six patients with psoriasis and two patients with ichthyosiform erythroderma, a congenital scaling skin disease. Determinations were made in pulverized, ether-defatted, non-hydrolysed horny material, in the aqueous extracts and the water-insoluble residue. Callus took up about 50 per cent more water than the pathological specimens (28 per cent versus 19 per cent). After extraction with water, the water-binding ability of all the residues became practically the same (17–19 per cent).

The assumption that the water-soluble components were responsible for the decreased water-binding ability of the pathological specimens was further supported by precipitating these substances from the extracts with an excess of acetone and determining their water-binding capacity. The acetone-precipitable material from the pathological scales took up considerably less water than their normal counterparts (47–49 per cent versus 114–116 per cent).

The most important dialysable water-binding components of the horny layer are free amino-acids[4,5]. The diminution of the free amino-nitrogen in pathological scales is confined to the water-soluble portion