

When the membrane separates 2 solutions of the same concentration but of different conductivity, such as 0.5 N KCl and HCl, the direction of the current is found to influence the resistance change. Thus when hydrogen ion is moved across the membrane, the resistance falls slightly with increasing potential, while when potassium ions are caused to pass by reversing the current, the resistance rises as much as 100% in changing from 0.1 to 3.0 volts. Somewhat similar differences are found when the membrane separates 2 different concentrations of the same solution.

There seems also to be an effect of the membrane itself when the same solution is used on both sides, causing a lower resistance in one direction than in the other. This may be due to the method of drying one surface in contact with glass.

The cause of the effect is perhaps to be sought in the changes of mobility which ions undergo when in such membranes (*cf.* Northrop and Michaelis). Probably also a concentration gradient is quickly established within the membrane which is disturbed by the application of a potential gradient, causing a new distribution of the electrolyte, even for short distances into the surrounding solution. Movement of water due to electro-endosmosis seems unlikely in view of the concentrations of salt used (0.1 to 1.0 m).

Photographic records of current changes in the measuring bridge show marked resemblances to those taken with *Valonia* and *Nitella* and the causes of the phenomenon may be similar in these cases. On the other hand, variations of resistance in human skin are probably more complex.⁴

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The Inverse Relation Between Inorganic and Lipoid Phosphorus in Blood of Rabbits.

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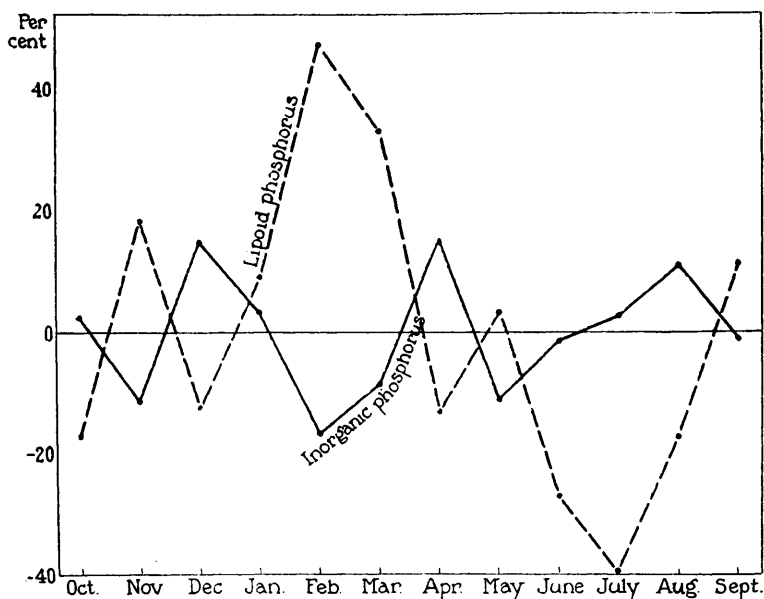
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In a recent paper,¹ attention was called to the fact that, among rabbits living out of doors, the inorganic phosphorus of serum and the lipid phosphorus of whole blood show wide variations with a high negative coefficient of correlation, $-0.794 \pm .09$. The curve

⁴ Gildemeister, M., *Handb. norm. u. path. Physiol.*, 1928, viii, pt. 2, 657.

¹ Harnes, A. R., *J. Exp. Med.*, 1928, xlviii, 549.

for inorganic phosphorus over a period of 12 months was almost a mirror image of the curve for lipid phosphorus (Fig. 1).



Additional experiments were performed for the purpose of testing the influence of light on this relation. Inorganic phosphorus of serum and lipid phosphorus of whole blood were studied on 4 groups of rabbits, one of which was kept in the open laboratory, another was exposed continually to Cooper Hewitt light, and the 2 other groups were kept in the dark; one of these was irradiated for one hour daily with a quartz-mercury arc lamp at a distance of 4.5 meters. The observations covered a period of 4 months.

The irradiated animals showed a high inorganic and a low lipid phosphorus while the 3 other groups showed a lower inorganic and a higher lipid phosphorus. But, the variations were such that, in all cases, the sum of the mean values for inorganic and lipid phosphorus were nearly constant.

The correlation coefficients were negative in all cases but were of a low order for all except the ultra-violet group.

Of the 6 groups of animals in which the relation between inorganic and lipid phosphorus has been studied, all have shown evidence of an inverse relation with a tendency to maintain a constant sum of the 2 forms. In only 2 cases, however, has the relation been sufficiently close to give a correlation coefficient of a high order; animals exposed to unfiltered sunlight and those irradiated

with the quartz-mercury arc gave high coefficients, while with others the correlation was low.

That an inverse relation exists in man is evident from the results obtained by McKellips, De Young and Bloor,² who found in the blood of normal infants a low lipoid phosphorus and a high inorganic phosphorus; in the blood of adults, a high lipoid phosphorus and a low inorganic phosphorus. McCluskey³ found the same inverse relationship in tuberculous patients.

It is also of interest to note that Zucker and Gutman⁴ report that in experimental rickets the inorganic phosphorus is decreased while the organic phosphorus is practically constant.

These results show that in the rabbit there is an intimate relation between the inorganic and lipoid phosphorus of the blood, and that the maintenance of this relation is influenced in a very striking manner by ultra-violet light. The conditions found suggest a reversible reaction which is subject to the influence of light. There is the further suggestion that the mechanism concerned in the maintenance of a normal equilibrium between inorganic and lipoid phosphorus in the blood may prove to be an important factor in diseases such as rickets, as it appears that the low inorganic phosphorus in the blood is not necessarily associated with a decrease in other forms of phosphorus or is not due to a phosphorus starvation.

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The Experimental Transmission of Leukemia in Mice.

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The only report in the literature of the successful transmission of leukemia in mammals, is that of Snijders,¹ who succeeded in trans-

² McKellips, De Young, and Bloor, *J. Biol. Chem.*, 1921, **xlvii**, 53.

³ McCluskey, K. Lucille, *J. Lab. and Clin. Med.*, 1925, **x**, 466.

⁴ Zucker, T. F., and Gutman, M., *Proc. Soc. Exp. Biol. and Med.*, 1922, **xx**, 372.

¹ Snijders, E. P., *Nederl Tijdschr. v. Geneesk.*, 1926, **lxx**, 1256. Transmissible leukemia in the fowl was first described by Ellermann and Bang in 1908. For a comprehensive review of this and other experimental work on leukemia, with bibliography, see Opie, E. L., *Medicine*, 1928, **vii**, 31.