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The relation of anatomic structure to function.

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It is a well known fact that function is often disturbed without corresponding anatomic lesion. There is always a suspicion, however, that the lack of demonstrable lesion is only apparent and really to be attributed to our crude methods of investigation and our lack of knowledge of the physiologic arrangements. As the Altmann method reveals some very fine details of the protoplasm, and as Altmann has shown that during normal function, especially when stimulated by injections of pilocarpin, the appearance and arrangement of the granules, brought out by his method in the protoplasm, changes quite remarkably, they being in many cases extruded to form part of the secretion, I thought it interesting to see whether these structures would serve as indicators of any primary alteration in the protoplasm of cells during functional disturbances.

The kidney appeared to be the organ best suited for this purpose as by collection of the urine directly after its discharge from the ureters, the exact moment of the occurrence of the disturbance could be ascertained. It is possible to produce albuminuria in dogs within a few hours by intravenous injection of bichromate of potash (about 2–3 c.c. of a 2% solution). If Altmann's specimens are made from the kidneys at this time no lesions are found. That the poison nevertheless acts upon the epithelial cells and the granules in them is shown by the subsequent development of severe lesion in them.

In phloridzin glycosuria, likewise, no lesions are demonstrable by this method, although we are fairly certain that the excretion of sugar in this case is due to a lesion in the kidney.

I am inclined to believe that quite a few of the anatomic changes which we now look upon as primary are the result rather than the cause of the functional disturbance, although the disarrangement brought about by them naturally often aggravates the

original condition. It is questionable whether the real primary lesion in such cases is of such character as to be ever demonstrable by physical methods.

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Proteid poisons.

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We have been able by diverse methods to split proteids, bacterial, vegetable and animal, into poisonous and non-poisonous products. The purpose of this abstract is to state briefly some of the properties of the poisons obtained by the cleavage of proteids.

The poisons obtained from the different proteids are similar but are not identical. All are soluble in both water and absolute alcohol, more freely in the latter than in the former. The aqueous solutions are acid and slowly decompose sodium bicarbonate, forming salts apparently, and these are less poisonous than the free acids. The aqueous solutions give the general color reactions for proteids with the exception of that of Molisch, and some of them give this reaction. However, most of the proteid poisons obtained by cleavage of the proteid molecule contain no carbohydrate and are free from phosphorus.

These poisons when injected into animals intra-abdominally, subcutaneously or intravenously induce characteristic symptoms and when administered in sufficient quantity kill promptly. There is a first stage which may be designated as that of peripheral irritation, which is characterized by restlessness and scratching. In the second stage there is partial paralysis, most marked in the posterior extremities; the third stage is characterized by more or less violent clonic convulsions and in the great majority of instances these terminate in death within half an hour after administration. Animals may show the first and second stages and still recover, but in the great majority the appearance of the convulsive stage indicates a fatal termination. As a rule death or recovery results within one hour and the former may occur within five minutes and,