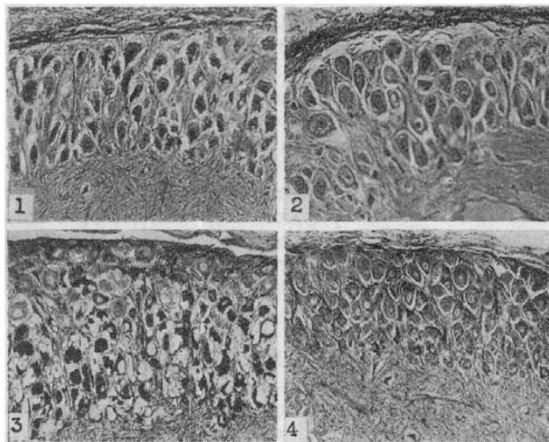


With solutions containing mercuric chloride or acetic acid, the difference between the results obtained with solutions made up in distilled and sea water was less marked, being least of all with Bouin's fluid and 'corrosive acetic', though even with these, some distortion could be detected when the fixative was made up in distilled water.

These results confirm the theoretical anticipation that the particles of the fixative do not exert a fully effective osmotic pressure relative to the tissues. One may conjecture that as soon as a piece of tissue is placed in a fixative made up in distilled water, ions begin to diffuse out from the intercellular fluids. Therefore, until the more slowly moving particles of fixative arrive, the cells are effectively in a hypotonic medium, and hence swell and burst. Fixing mixtures generally contain fast-moving ions the value of which is probably that they counteract this effect. However, in many cases the same result can be better achieved simply by the addition of salts. For example, 1 per cent chromic acid in sea water is a really excellent fixative for the nerve cells of *Sepia*.



Nerve cells of *Sepia* in different fixing solutions. (1) 4 per cent formaldehyde in distilled water; (2) the same in sea water. (3) Champy's solution in distilled water; (4) the same in sea water.

When dealing with a marine animal, therefore, all fixatives should be made up in salt solutions similar to those found in the blood of the animal, especially if the fixative is based on formaldehyde, chromic acid, picric acid, potassium dichromate or osmium tetroxide. Further work is now being done to determine to what extent similar considerations apply to the fixation of the tissues of land animals.

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<sup>1</sup> Baker, "Cytological Technique". London, 1933.

<sup>2</sup> Carleton, *Quart. J. Micr. Sci.*, **66**, 501; 1922. Hirsch and Jacobs, *Z. Zellforsch. u. mikr. Anat.*, **3**, 198; 1926. Hertwig, *Z. mikr.-anat. Forsch.*, **23**, 484; 1931.

<sup>3</sup> Underhill, *J. Roy. Micr. Soc.*, **52**, 113; 1932.

MR. YOUNG has kindly allowed me to study his slides. There is no doubt that he has proved his point, and that the conclusions that I have drawn about the osmotic pressures of fixatives in my book "Cytological Technique" are erroneous.

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### Chinese Influence on Western Alchemy

IN his very able reconstruction of the origin and development of Western alchemy, Prof. A. J. Hopkins<sup>1</sup> does not discuss the possible influence of Chinese ideas as the seed which may have served to crystallise alchemical philosophy in Alexandria "somewhat after the beginning of the Christian era". He presents the origin of Egyptian alchemy as a perfectly logical and highly successful application of Platonic-Aristotelian philosophy to the apparently miraculous colour changes effected by the Egyptian craftsman in his closely allied arts of dyeing fabrics and colouring metals.

Existing data<sup>2</sup> show that alchemical practices were common in China probably several centuries before they appeared in Egypt, and the suggestion has been made that the Western art possibly owes its inspiration to the former. It thus becomes a matter of some interest to determine whether such a possibility is compatible with Prof. Hopkins's thesis.

Chinese alchemy<sup>2</sup> was concerned primarily with the twin pursuits of immortality and transmutation. In each case the goal was to be reached by changing the base, heavy, coarse, gross, material, undesirable, etc. (that is, *Yin*), qualities of man or metal into the opposite noble, light, fine, ethereal, spiritual, desirable, etc. (that is, *Yang*), attributes. The underlying philosophy regarding why and how this could be accomplished was closely linked with Taoism and the search for the *Tao*, but one gains the impression that Taoism was much more inextricably intermingled with efforts towards longevity and immortality of man than with those towards the transmutation of metals. Continuous life (that is, with no intervening death and bodily dissolution) involved bringing man into conformity with *Tao* through the conversion of his *Yin* (material, corruptible) nature into the *Yang* (spiritual, incorruptible, *Tao*). Some assumed knowledge of Taoism, therefore, would appear to have been pre-requisite for any hope of success, including at least a working hypothesis regarding the spiritual part of man. On the other hand, in the case of the transmutation of metals as a means to mundane riches or position (that is, when not too closely associated with the idea of immortality and the life-prolonging 'elixir'), attention appears to have been centred more closely on the contraries, *Yin* and *Yang*.

It is interesting to speculate on the reception in Alexandria which might have been accorded to marvellous tales of immortality and transmutation carried thither along the trade routes from China. It seems probable that stories of immortality, of "the drug which prevents death", of the *hsien* or 'immortals' would have been listened to with incredulity. Since the *Tao* was not comprehended in China, in what a garbled and unintelligible form would Taoism have been discussed in Alexandria—if indeed its very abstruseness would not have prevented any such discussion. Furthermore, the Alexandrian had no personal evidence of immortality in the Chinese alchemical sense, and he already possessed several alternative hypotheses regarding the spirit and soul of man. But the fact that the early centuries of Western alchemy are free from the illusion of immortality, whereas this aspect was the earliest and always the most important feature in China, does not necessarily disprove a Chinese influence on the origin of alchemy in Egypt. Accounts of