

digestive juices, but that all actions of the individual are affected by the particular surrounding conditions of such actions.

That unfortunate effects result from the failure to appreciate the fact that in dealing with the human organism we are not dealing with isolated elements is a common observation in medical practise. All too frequently an individual, who is clearly in the process of preventable disintegration, is caused to break down completely because the elemental theory actuates the psychiatrist to pronounce that there is nothing wrong with a person having no apparent organic or functional lesion. The writer wishes to suggest, that at least from a medical standpoint, we have placed too great emphasis upon the chemical factors in the process of human digestion and too little stress upon the psychological factors.

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A SIDEWALK MIRAGE

TO THE EDITOR OF SCIENCE: It seems the phenomenon here described must have been noticed by many others, but it caught my attention for the first time about two weeks since, and nowhere have I seen it described.

On several occasions, lately, I have observed a mirage under the conditions hereafter stated which are those of a typical case. I was walking eastward on a cement sidewalk on a street running nearly east and west, and moving up a moderate grade which joins a nearly level stretch of walk. On reaching a point which brought my eye slightly above the level portion, and at which normally the level stretch would have been seen in its entire length, but much foreshortened, I observed instead what appeared to be a stretch of clear dark water covering the entire width of the walk, and brilliantly reflecting moving persons and other objects in sight beyond it.

The sky was clear, the air cool, the sun high. It was about three o'clock p.m., local time. There was a moderate breeze. The angle of observation was very small, probably not above three degrees. A step or two either east or west, and the water was gone,

but within the proper limits, the illusion was definite and continuing. The Weather Bureau report for the day indicates that approximately 30 feet above the spot where the mirage was observed the air temperature was about 63° F. and the humidity about 63°.

The resemblance between conditions here described and those which produce the mirage on the plains is obvious.

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SCIENTIFIC BOOKS

Helmets and Body Armor in Modern Warfare.

By BASHFORD DEAN. New Haven, Yale University Press.

To most of us armor belongs to the romantic past. We hardly think of it as a practical, up-to-date accessory of modern warfare. But in a book which has recently appeared, it is clearly demonstrated that armor has still a distinct value. We are of course familiar with the various steel helmets used by all the nations in the Great War, but it is not generally known that all the countries were hard at work experimenting with and developing body armor of every sort for their fighting men. General Pershing recognized its value and in the title page of Dr. Bashford Dean's "Helmets and Body Armor in Modern Warfare" he is quoted as saying that "effort should be continued towards a satisfactory form of body armor."

Dr. Dean is the foremost authority on armor in this country and curator of arms at the Metropolitan Museum of Art. When we entered the war he was placed in charge of the armor problem and his tireless energy and enthusiasm, together with the generous co-operation of the Metropolitan Museum, led to the development of many types of armor for our combat troops. It is unfortunate that too little of this armor was used during the final drive of 1918.

Dr. Dean views the subject from many angles. The introduction is devoted to the evolution of modern armor from early times and enables one to contrast the old with the new. The medical viewpoint is considered

with statistics showing the frequency of wounds in certain locations and its bearing on the armor problem.

The utilitarian side is shown and the advantages and disadvantages are carefully weighed. Of interest to metallurgists are tables showing the ballistic values of various metals used for armor and one interesting chapter is devoted to the subject of "yielding" armor, such as padded cotton and silk fiber. Indeed the matter is viewed both from a distance and in minute detail.

The experimental types of armor of all countries are shown and reasons given for their success or failure.

Dr. Dean's summary and conclusions are of particular interest. He believes that we have not as yet solved the problem of providing the best alloy for armor and that the end, as far as the improvement of thin plate for ballistic use, is not yet in sight.

The old struggle between bullet-proof armor and armor-piercing bullets is still on, although at the present time the armor seems to have the advantage.

The question of the best form of the American helmet is also considered. At present we are still using the British helmet and American experts agree that this model does not give sufficient protection to the back and sides of the head. Moreover, a national type should be adopted.

The question as to whether armor will be used in the future hinges not a little on the problem of getting transports to the front. The infantry-man carries a maximum necessary load without his armor which would therefore have to be sent up to him.

Considerable prejudice among the men also accounts for the unpopularity of armor—they do not wish to be burdened with it and would rather take the chances on being hit. But as the author puts it, if they can be made to see that it is really worth while, this prejudice may be overcome.

Dr. Dean, from his careful study of ancient armor and his practical knowledge of modern conditions, is qualified to speak with authority on the subject. In designing the modern hel-

met, a comparative study was made of the more ancient ones in the Armor Hall of the Metropolitan Museum of Art. Diagrams showing the development of armor were used and every type of helmet used with success in the past was carefully studied. If it seemed practical, a modern adaptation was designed and beaten out by hand. Due allowance was made in the design for its eventually being pressed out in millions by modern machinery. By this common-sense method Dr. Dean was able, in a comparatively short time, to weed out the impractical forms and to develop a modern type of armor made by machinery for modern warfare.

Who can say, but what it may not yet be used?

DWIGHT FRANKLIN

SPECIAL ARTICLES

DECOMPOSITION OF HYDROGEN PEROXIDE BY ORGANIC COMPOUNDS AND ITS BEARING ON THE CATALASE REACTION

THE last few years have witnessed a revival of unusual interest in the oxidizing enzymes and more particularly in catalase. The catalase reaction derives its interest from the fact that according to recent interpretations it is supposed to be a measure of the metabolic function of living matter. This view, entertained some twenty-odd years ago by Spitzer,¹ has been given much currency in late years by Burge whose numerous contributions to this topic are well known.

Considering the process of intracellular oxidation which is still very obscure it is possible to recognize three factors or enzymes involved in some way or other in the reaction. Of these the oxidases affect the oxidation of easily oxidizable substances directly; the peroxidases accomplish this indirectly by activating part of the oxygen of peroxides; lastly, the catalases by decomposing peroxides liberate inactive or molecular oxygen. It was in this sense that Loew² employed the designation "catalase" for the enzyme which may ultimately turn out to have no relation to the

¹ Spitzer, *Arch. ges. Physiol.*, 67, 615-656, 1897.

² Loew, Report 68, U. S. Department of Agriculture, 1901.