two horns on his exceptionally broad flat head and one of the skirted figures has three feathers across the top of the head. All the figures are standing except one male which is lying horizontally.

Two nude figures, each one showing a large phallus, and two long slender skirted female figures were covered with a thick coating of transparent staligmitic deposit.

The four figures covered with staligmitic deposit were about the middle of the row where it seemed the mineral had flowed down across them from above. The usual thickness of the mineral deposit was about that of a table knife.

The writer has visited the spot twice and there was then no evidence of water or dampness on the wall. There is no spring flow nor seep there now. The ledge is high up near the top of a dry limestone ridge and the area above the ledge is so small that there would not be any dripping over of water except for brief periods during or immediately following rains. The carbonate of lime deposit is so thick over one of the paintings that it can not be copied, although it seems to be that of a long-skirted figure.

The various female figures are represented as in motion. One skirted figure is carrying a long-handled racquet-like object high above the head in the right hand. Another skirted figure shows the arms extended and a ball in the air beneath the left one.

All the nine large figures show an extreme flatness of the vertex, and in the males the head is exceptionally flat and broad across the top. One which shows the ears indicates very little skull above them.

When one considers the unusual artistic merit of the drawings he can not believe that this repeated depiction of exceptional vertical flatness is either accidental or coincidental. It might be a true prehistoric artist's conception of some long extinct type of Texas inhabitants whose skulls were exceptionally flat.

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SOME EARLY AMERICAN MUSEUMS

THE extremely interesting article in SCIENCE for September 18 by Dr. Simpson about the oldest natural history museum in America deserves additional comment. While the present writer accepts all Dr. Simpson's conclusions as to what may be the oldest museum now in existence on this continent, he feels constrained to point out that neither Philadelphia nor Charleston can claim the first public museum to be established in America, for that honor belongs to Matape in Sonora, where Father Eusebio Francisco Kino established a museum of natural history as early as 1681, nearly a century before the two cities mentioned by Dr. Simpson. The story has been told by Dr. Herbert E. Bolton in "Rim of Christendom."

In this connection it is appropriate to recall another early museum—that opened in 1791 by José Longinos Martínez in Mexico City. The influence of this all but forgotten pioneer has recently been recognized by the dedication of a bronze plaque to commemorate the sesquicentennial anniversary of his arrival in San Diego. Incidentally there is very little known about this early scientific explorer other than that he was an associate of Martín Sesse y Lacosta. If any of the readers of this letter should happen to have any further information about him, the writer would appreciate a communication.

Finally, although it has nothing to do with the matter under discussion, I would like to submit a comment on the censorship to which SCIENCE has been subjected. To the editorial from *The New York Times* quoted on pp. 274–5 I would like to offer an unqualified Amen. Both the pacifist and the conscientious non-pacifist can agree that whatever individual opinions they may hold toward the institution of war, the withholding of information that might lead to the alleviation of human suffering is contrary to the principles of Christian philosophy.

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SCIENTIFIC BOOKS

ELECTRICAL TERMS

American Standard Definitions of Electrical Terms. Sponsored by The American Institute of Electrical Engineers. 311 pp. New York: Published by the American Institute of Electrical Engineers.

THIS book, which carries the approval of the American Standards Association and of the Canadian Engineering Standards Association, and which is also sponsored by the American Institute of Electrical Engineers, should prove a very valuable volume to a large group of physicists and engineers. In addition to fulfilling the purpose which its title indicates, it carries in some cases in condensed form quite a little experimental material. In fact, one who is a little rusty on matters in vector analysis, potential theory, damped oscillations, etc., might reestablish much of his mental equipment by reading the first portions of the book.

If one should wish to be controversial, there are few domains providing a wider field for his acrimonious activities than one having to do with definitions. Hence there will doubtless be some differences of

opinion among physicists and engineers as to the order or importance of the definitions of some of the physical quantities, particularly those having to do with electric and magnetic fields.

Those among the purest of mathematicians who fear too much contamination with the world of matter will probably shudder at the statement on page 16 to the effect that over a given range a function of x may always be represented by a curve with the slope as its derivative. However, such matters are mentioned, not as criticisms, but to clear the conscience of the reviewer. In the same category are such statements as the definition of matter, on page 26, as a physical entity which possesses mass. Personally, this reviewer is happy with the thought, even though the entity concerned is a quantum of radiation. However, some might question the definition if they were looking for trouble. Perhaps the definition coming nearest to the realm of inviting valid criticism is that of kinetic energy, which is defined as $mv^2/2$, where m is the mass and v the velocity. Even in the domain of electrical engineering, when approaching such modern appliances as are involved in cyclotrons, etc., and even in some problems of thermionics, one has to recognize the relativistic significance of kinetic energy.

Again referring to the matter of definitions, one who read the book without already having established in his mind a consistency of order in the matter of definitions might become confused when, on page 30, he reads that "an electric current through a surface is the time rate at which positive or negative electricity passes through the surface" and finds that, up to this point, he has had no definition of a quantity of electricity in the numerical sense. However, the book is intended primarily for those who have stabilized their thoughts on these matters, and for such it is an invaluable work, both as regards its scope and presentation.

The book carries a very copious index of some fifty or more pages, which adds materially to its value. Those responsible for the preparation of this work deserve the greatest commendation and the gratitude of all students of electrical science.

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SPECIAL ARTICLES

ANTIBACTERIAL PROPERTIES OF PROTAMINE AND HISTONE

IT is known that antibacterial compounds such as gramicidin and anionic detergents attack with almost complete selectivity only Gram-positive micro-organisms.[1, 2, 3] It has been demonstrated that the activity of these compounds is inhibited by phospholipids.[4] The possibility has been suggested that the inability of gramicidin and anionic detergents to inhibit most Gram-negative bacteria may be caused by the phospholipids of these organisms.[1, 3, 4] On this basis, it seemed possible that compounds such as protamine sulfate which are known to precipitate cephalin[5] might cause Gram-negative micro-organisms to become susceptible to these selective inhibitors. In testing this hypothesis we found that (a) certain selective inhibitors in the presence of protamine became active toward the Gram-negative organism *Escherichia coli*, and (b) the basic proteins protamine and histone themselves possess anti-bacterial properties.

Despite the extensive literature on protamines, their antibacterial properties appear to have been largely overlooked except for the isolated observation of McClean[6] that protamine inhibited the growth of *Eberthella typhosa*. This investigator also found that both protamine and histone inhibited the growth of vaccinia virus;[7] and Reiner, deBeer and Green recently showed that the respiration of *Trypanosoma equiperdum* was partially inhibited by these compounds.[8]

In our experiments, metabolic effects were measured in Warburg respirometers as previously described.[2] Each vessel contained from 5 to 15 billion organisms suspended in 3.0 ml of 0.038*M* phosphate buffer containing 0.02*M* glucose. Bactericidal power was determined by the F. D. A. phenol coefficient technique with the following modifications: (a) washed cells were employed, and were exposed to the test compounds for 5-, 15- and 45-minute periods, and (b) all tests were performed at 37° C. For the experiments with protamine several samples of salmine sulfate obtained from Dr. George A. Harrop, of E. R. Squibb and Sons, were used. The histone was prepared from fresh calf thymus by the method of Felix and Harteneck.[9]

SENSITIZATION OF GRAM-NEGATIVE MICRO-ORGANISMS

Neither Tergitol-7, a typical anionic detergent, nor

[1] R. J. Dubos and R. D. Hotchkiss, *Trans. and Studies Coll. Phys. Philadelphia*, 10: 11, 1942.

[2] Z. Baker, R. W. Harrison and B. F. Miller, *Jour. Exp. Med.*, 73: 249, 1941.

[3] *Ibid.*, 74: 611, 1941.

[4] *Ibid.*, 74: 621, 1941.

[5] E. Chargaff and M. Ziff, *Jour. Biol. Chem.*, 131: 25, 1939.

[6] D. McClean, *Jour. Path. and Bact.*, 34: 459, 1931.

[7] *Ibid.*, 33: 1045, 1930.

[8] L. Reiner, E. J. deBeer and M. Green, *Proc. Soc. Exp. Biol. and Med.*, 50: 70, 1942.

[9] K. Felix and A. Harteneck, *Z. physiol. Chem.*, 157: 76, 1926.