QUOTATIONS

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

NEARLY a quarter of a century ago, on January 19, 1903, a small group of scientific investigators in New York met at the call of Professor Graham Lusk and the late Dr. S. J. Meltzer to consider the organization of active workers in experimental biology and medicine. This was the meeting that initiated the Society for Experimental Biology and Medicine under the presidency of Dr. Meltzer. The main object of the organization was the cultivation of the experimental method of investigation in the sciences of experimental biology and medicine. Membership in the group was limited to persons who had completed some meritorious independent experimental research in that field of study. The programs, from the start, consisted in brief presentations of the essential features of experimental investigations, and frequently of demonstrations of actual experiments. The membership soon outgrew its confinement to "Greater New York" and spread throughout the country. One reason for the success that has attended the development of this society lies perhaps in the significant circumstance that it has aimed to bring together workers in many fields, such as physiology, biochemistry, biology, bacteriology, pharmacology and experimental medicine, at a time when rapidly developing specialization had already begun to segregate investigators into small groups. The new society thus represented a wholesome reintegrating force and provided a stimulus for the discussion of "borderline" and interrelated problems. It has become an influence tending to overcome the danger of narrowness in the present-day outlook on the natural sciences with which medicine is so closely bound up. Another early object of the society was the development of high standards of presentation and scientific criticism. Incidentally, not a few significant discoveries have been announced for the first time at its meetings. As might be expected, this movement was bound to be followed by similar endeavors elsewhere. Many of them have resulted in the organization of branches of the society. To-day ten branches are located all the way from New York to Peking; eight more are at present under contemplation. The contributions, in the form of brief, concise summaries, are embodied in the *Proceedings of the Society for Experimental Biology and Medicine*, which is available through subscription. This journal deserves the active support of members of the medical profession, who are likely to find it stimulating and informative. Published without special endowment and maintained by the contributions of scientific workers, it needs and enlists the help of those who can benefit by its program.—*The Journal of the American Medical Association.*

MUSCLE, YEAST AND CANCER CELLS

IN his comparative study on the carbohydrates and gaseous metabolism of isolated muscle, at rest and at work, Otto Meyerhof[1,2] finally established beyond all doubt the doctrine that utilization of oxygen by muscle takes place normally, not during the act of contraction but rather during the periods of relaxation and rest immediately following. It was further shown that the energy required for contraction is directly derived from the breakdown of glycogen into lactic acid, whereas during the recovery period the oxidation involves a twofold action, the burning of one part of sugar, or its lactic acid equivalent, to carbon dioxide and water, while three to six times the amount of lactic acid is built back to glycogen. In other words, the immediate source of the energy for contraction is gotten by an anaerobic reaction, while the recovery from the contraction in its normal and most efficient manner is accomplished by an aerobic chain of reactions which culminates in the saving of a large part of the carbohydrate that had been split during the anaerobic phase or the contraction period. A further study revealed the fact that the processes found to hold for muscle in action also take place during periods of complete normal rest, although with much less intensity, so that the resting level of lactic acid concentration, from 0.015 to 0.03 per cent. of the muscle's weight, represents not only the residue of a previous recovery period but also the continuous balance sheet of a never-ceasing anoxidative carbohydrate splitting and an equally continuous oxidative removal of the split bodies by the twofold process of one part burned to carbon dioxide and water and from three to six parts built back to glycogen.

It is obvious that the anoxidative phase of these events is an expensive, prodigal one, but one apparently capable of yielding quickly and abundantly the free energy that is needed to enable the muscle cells to raise tension and to contract as quickly as they do; whereas the oxidative phase is one that not only frees the cells of the split products that accumulate during the anoxidative phase, clearing the decks for the next action, as it were, but does it in the manner of a salvager, rescuing at the same time as much of

[1] Meyerhof, O., "Die Energie Umwandlungen im Muskel," *Arch. f. d. ges. Physiol., 182*: 232, 284 and *185*: 11, 1920; *188*: 114, and *191*: 125, 1921; *195*: 22, 1922; Meyerhof, Lohmann, u. Meier, "Synthese des Kohlehydrats im Muskel," *Biochem. Zeitschr., 157*: 459, 1925.

[2] Hill, A. V., u. Meyerhof, O., "Über die Vorgänge bei der Muskelkontraktion," *Ergeb. d. Physiol., 22*: 299, 1923. (This joint review should be consulted for earlier literature and contributary evidence.)