shown by the distance runner, where endurance is so essential? Is there any relation between the type of muscle and its acid tolerance?

Although no definite data were collected upon the size of the arm before and after work, a few observations were made which showed results, of which the following figures would be typical. At a definitely marked point the increase in the circumference after work averaged 1.2 c.m., and after ten minutes massage it was reduced to .5 c.m. greater than the original size. The increase in the size of the arm was quite apparent on casual observation.

After completing the experiment the subject would complain of intense pain, the muscle would be in a state of partial contracture with the fibers knotted, very firm and resistant to the touch and the finer coördinations and control very much limited indeed. Most marked, however, was the very great increase in the temperature of the arm, localized chiefly in the belly of the muscle. This increase in temperature was quite evident to the crude sense of touch, but no definite observations as to the degree, however, were taken. These manifestations would be evident after each maximal effort, but were modified when the various forms of physical treatment were used during the interval of ten minutes before the "recovery attempt" was made.

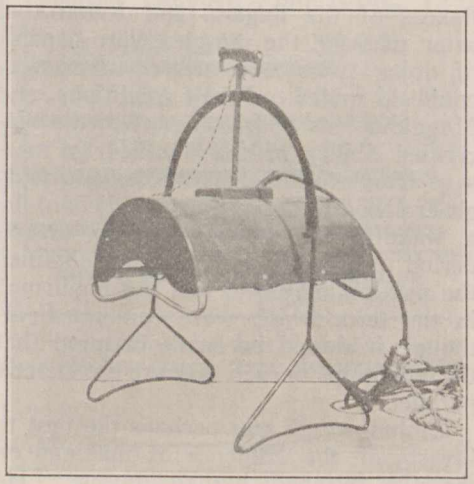
Forms of Treatment Used.

Fishbein[23] has given a very critical dissertation upon the history, aims, objects, claims, fallacies, and misconceptions of physical therapy and stated that a council on physical therapy was recently appointed by the American Medical Association "to give the medical profession unbiased and scientific statements concerning the physical therapy field" and "to evaluate the actual worth of physiotherapeutic apparatus and methods, and to keep the medical public informed by regular statements of the actual truth or fallacy of such claims. The medical profession may confidently look forward to the time when the path between the vast accumulation of discarded refuse, jumbled wires, rusted hydrotherapeutic apparatus, peculiar tables and benches, worn out electric bulbs, and other queer therapeutic apparatus, and the path leading by simple and clean methods to honest therapy will be clear."

Series I. Radiant Heat.

Kovacs[24] states that the combined action of radiant light and heat causes a vasodilatation, free perspiration and increased metabolic changes in the superficial tissues. Cajori, Crouter, and Pemberton[25] state that "as a result of external heat, the blood becomes more alkaline; there is a fall in its total content of CO_2, and a slight rise in alkali reserve. These changes in the acid-base equilibrium of the blood cause compensatory changes in the urine and sweat." McKenzie[26] claims that the application of radiant heat causes a dilatation of the surface capillaries followed by constriction and then a dilatation of the deeper vessels and thus a stimulation of the flow of blood.

A covered two-lamp Burdick baker, registering a temperature of 135° to 150° F. was used and applied over the forearm and hand immediately upon the cessation of the initial effort. It was allowed to remain for 9½ minutes, and for the remaining ½ minute, the subject was permitted to move his arm and hand about as he desired. He then resumed contractions once again to the point of absolute fatigue. The average *recovery percentage for all thirty tests was 101.3%*, or 19.1% more than the recovery under rest alone. That is, the muscles were able to do more work than during the initial effort.



Adjustable two-lamp baker, covered with blanket when in use.