and the benzene was removed by distillation. Acetic acid was added to the watery extract until maximum precipitation of lipoid was obtained. The precipitate of lipoid was removed by filtration. The filtrate was clear and almost colorless. It was made to represent 15 gm. of whole glands per cc.

5742

Influence of Laughter on Muscle Tone.

HARRY A. PASKIND. (Introduced by L. J. Pollock.)

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This study had its inception in the observation that in narcolepsy there occur attacks of cataplexy or tonelessness on emotion, especially during laughter and mirth. It was thought worth while to study by objective methods the effect of laughter on muscle tone.

The apparatus used was devised by Dr. L. C. Hutchinson of the University of Minnesota. The method consists essentially of passively flexing the forearm at a constant speed against a flat spring. The greater the resistance offered by the arm, the greater was the deflection of the spring. The spring was connected with a writing lever in such a way that the writing lever rose or fell with increasing or decreasing deflections of the spring. In this way the writer lever writing on a smoked drum described a tracing.

Experiments were done on 50 normal subjects. The first reading was taken with a calm facial expression. Then a reading was taken during laughter. Laughter was induced. In no instance was any considerable amount of mirth present but not all spontaneous laughter is due to mirth. It was thought possible that changes in muscle tone seen on laughter were due to the fact that the subject was distracted by his laughter, for this reason control readings were taken with the subject frowning to rule out the effect of distraction.

It was thought that the best method of measuring variations in muscle tone under the varying conditions of the experiment was to determine the differences in the amount of work done in passively moving the arm a certain distance. Since the area underneath a curve is an indicator of the amount of work done, the measurement of these areas and their comparison afforded a convenient method for the interpretation of the results. The area measured in each tracing was one resembling a right angled triangle. The base was

the base line of the curve. Three inches of base line was chosen arbitrarily because it included all the elements of the curve. The side of this triangle was a line drawn at a right angle to the base line from the base line to the curve. The hypotenuse was the tonus tracing, in all instances irregular. The areas so delimited were measured with a planimeter, which gave readings in square inches. The planimeter readings were taken as an index of the amount of work done and may be called work values. Variations in the work values represent variations in the amount of work necessary to passively flex the arm; they represent variations in the amount of muscle tone. The accompanying table may serve as illustration of the variations in the work values in a few subjects, during repose, during laughter, and during frowning.

TABLE I.

Subject	Flexion of Right Arm. Work Value During		
	Repose	Laughter	Frowning
H. D.	2.33	1.45	2.48
H. C.	3.18	1.03	3.75
D. M.	4.17	2.96	6.34
H. H.	3.43	3.10	4.12
L. R.	4.30	4.07	5.06
C. H.	3.53	2.20	3.53
A. M.	2.13	1.81	2.88
E. R.	3.12	1.89	3.17
K. B.	1.93	1.12	2.85
R. K.	2.60	1.42	2.45

It was found that in 48 subjects, or 96%, there was a diminution of muscle tone during laughter, in 2 subjects, or 4%, there appeared to be an increase in muscle tone during laughter. In 39 subjects, or 78%, there was an increase of muscle tone during frowning; in 8 subjects, or 16%, there was a decrease and in 3 subjects, or 6%, there was no change during frowning.

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The Endodermal Origin of Middle Ear Cartilages of Rana.

H. N. VIOLETTE. (Introduced by A. W. Meyer.)

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In recent years a small, hitherto unknown cartilage has been described in the Amphibia. This develops at metamorphosis in the