comparable in size with that of China. Pope has, single-handed, done for China what has not yet been accomplished for the United States. Since our reptilian fauna is more similar to that of China than to that of any other Old World area, this book will be of great interest and usefulness to American students.

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SPECIAL ARTICLES

CAFFEIC ACID IN PRUNES AND ITS BEHAVIOR AS A LAXATIVE PRINCIPLE

IN studies on the laxative principle of prunes[1] it was observed that caffeic and chlorogenic acids caused an increase in tonus and amplitude of contraction of isolated rabbit jejunum or duodenum. This action was similar to that caused by various prune extracts.

In view of the forementioned results, an attempt was made to isolate chlorogenic and caffeic acids from dried Santa Clara prunes (Prune D'Agen) and determine their laxative actions. We were unable to obtain any indication of the presence of chlorogenic acid; however, caffeic acid crystals were obtained from the alkaline hydrolyzed water extract of prunes by the method of Plücker and Keilholz[2] and Freudenberg.[3] These crystals were definitely identified as caffeic acid by melting point, mixed melting point and elementary micro-analytical determinations. The latter gave C 56.75 per cent. and H 4.77 per cent. as compared with the theoretical values C 57.14 per cent. and H 4.76 per cent. Quantitative determinations indicate a concentration of about .03 per cent. caffeic acid in the whole dried prune. The variations in concentration of caffeic acid in prunes were not determined.

The source of caffeic acid in prunes is still uncertain. Since Kohman and Sanborn[4] reported the presence of quinic acid in prunes it was thought that the source might be chlorogenic acid, but, as already stated, this acid was not found to be present. Nierenstein[5] has suggested that these two acids are often combined in complex caffetannins.

Feeding tests with live rabbits, dogs and human subjects have failed to show any significant laxative effect, whereas in tests with isolated rabbit duodenum a slight change in tonus and amplitude was observed.

It is concluded that caffeic acid has been isolated from prunes and that it is not the substance responsible for the laxative action caused by the ingestion of prunes.

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[2] W. Plücker and W. Keilholz, *Ztschr. f. Unters. der Lebensmittel*, Bd. 68, S. 97, 1934.

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THE EFFECT OF THE PERFORMANCE OF PHYSICAL WORK ON MIMOSA

IT is recognized that physical work or exercise within physiological limits makes the muscles of animals stronger and more difficult to fatigue. This investigation was begun to determine what effect, if any, the performance of physical work would have on the susceptibility of the plant, Mimosa, to fatigue, as well as on its capacity to perform work. For this purpose seven vigorous potted greenhouse plants of *Mimosa pudica* were used. The plants were approximately 30 cm high and had been grown from seeds sown 10 months earlier. Two leaves of approximately the same size of each plant were selected. One of these leaves was made to perform physical work, while the other, which served as a control, was not. It should be mentioned in this connection that the experiments were carried out in a greenhouse maintained at a temperature of approximately 26–27° C. and under natural conditions of day and night in January and February when the days were around 10 hours in length and the nights 14 hours.

The method of making the leaf perform physical work or so-called exercise was to attach weights to the leaf and then stimulate by dropping a cylindrical piece of wood 30 mms. long and weighing 90 mgs through a glass tube 25 cm long and striking the junction of the four primary leaflets, as shown in Fig. 1. This stimulus caused the leaf to drop and when the leaf rose during the succeeding 15 minutes physical work was performed by raising the weight. Knowing the extent of rise of the leaf and the weight of the load lifted, the amount of work done could easily be calculated.

The experiments were performed in the following manner. At 9 A. M. a 115 mg weight was suspended at the junction of the four primary leaflets to one leaf of each of the seven plants to be worked or exercised, and these were then stimulated and caused to drop as described above and shown in Fig. 1. During the

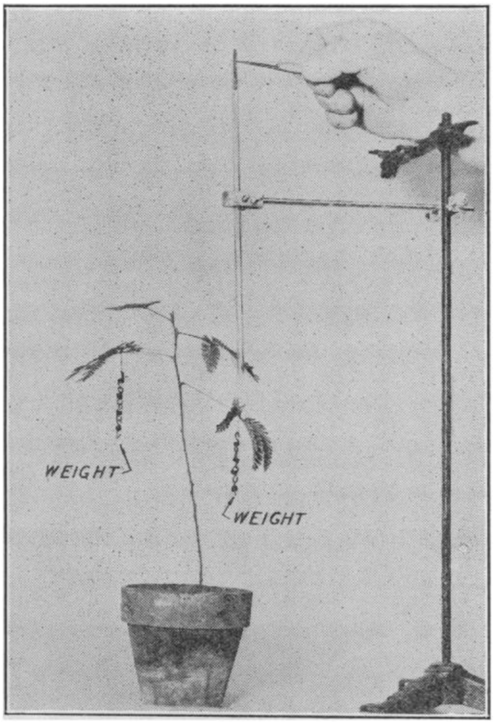

FIG. 1. Shows method of loading and stimulating Mimosa to make the plant perform physical work.

succeeding 15 or 20 minutes the leaves rose and in lifting the weights performed physical work. The weights were permitted to remain suspended to the leaves until the next morning at 9 A. M. when another 115 mg weight was added to each leaf and the same procedure of stimulating and working or exercising the leaves was repeated. This was continued for five days so that at the end of this period each leaf was carrying a 575 mg load, 115 mgs having been added each day for five days. The procedure was then reversed. One 115 mg weight was removed each day and the leaves were stimulated and made to perform physical work for five days while the load was being decreased.

In this manner, the leaves were made to perform physical work or take exercise for three 10-day periods, or 30 days. At the end of this time the following experiments were carried out to determine if the exercised leaves were able to perform more physical work and were less easily fatigued than the unexercised ones of the same plant. A 575 mg weight was suspended to each of the exercised as well as to the unexercised leaves of the same plant, as shown in Fig. 1, and each leaf was then stimulated and caused to drop. During the succeeding 60 minutes the leaves rose, lifted the weights and performed physical work, which was calculated and expressed in ergs. This was done by multiplying the load by lift by 980 to change to absolute units of work. At the end of the 60-minute period, the leaves were stimulated again and caused to drop, and the amount of work performed by raising the weights during the succeeding 60-minute period was also determined. It was found that the average amount of work performed by the exercised leaves was 2,874 ergs and that by the unexercised ones 2,029 ergs. By comparing these figures it will be seen that the exercised leaves performed 41 per cent. more work than the unexercised ones. It was also found that when the leaves were stimulated at several 60-minute intervals, as described above, the unexercised leaves fatigued more quickly than the exercised ones.

From the preceding experiments it may be concluded that the performance of physical work increases the capacity of the leaves of the plant, Mimosa, to do work and renders them more difficult to fatigue, an effect very similar to the action of physical work on the muscles of animals.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

A NEW MICROCOLORIMETER

THIS instrument was devised primarily for bromsulphalein liver function tests in experiments in which but small quantities of blood were available. The apparatus consists of the following principal parts: telescope and prism of an ordinary colorimeter, microcells, microcell holder, round rotating carrier for standards, base and electric bulb, reflector and screen.

In the figure, the microcell holder is shown below the prism, in working position. The diagram of the holder represents the two separable parts, three microcell cups, the two vertical windows and the offset for accommodating the standard carrier. A standard microcell, *d,* and a microcell, *e,* holding the solution to be assayed, are shown mounted for observation in microcell cups. The cups, *f* and *g,* are each to be occupied by a microcell containing an appropriate blank which is used in order to provide the same media in both pathways of light. The vertical windows, including the portion of the window represented in the movable carrier for the standards, are slightly larger in cross-section than the corresponding cavities of the microcells. However, the central vertical axes of the cylindrical cells and windows are in perfect alignment.

Brass afforded a satisfactory material for the con-