

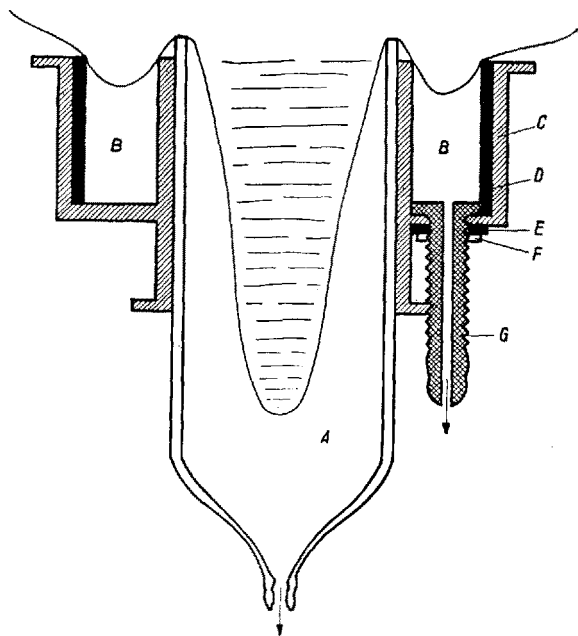
### Summary

Preparation of a clear solution of carotene in water with the aid of "Tween".

## Measuring Changes in Volume of the Teats of the Bovine Mammary Gland by means of Plethysmography

In the course of experiments in the field of the physiology of lactation we have elaborated a plethysmographic method for following the changes in volume of the teats of the cow's mammary gland. It is well-known that this volume depends upon different factors such as changes of temperature, mechanic stimuli, etc.

We have succeeded in constructing a simple apparatus, allowing us to objectivate changes in the volume of the teats of the bovine mammary gland, the cow being in the stable in an upright position. No disturbance of the psyche of the animal is caused. The apparatus is in no way a hindrance to the circulation of the blood in the teat under examination.



*Principle of the method:* The teat to be examined is put in a glass tube which is pressed firmly against the base of the mammary gland by means of a rubber ring which acts as a sucker, this sucker being connected with an ordinary vacuum pump. The applied vacuum causes the whole apparatus to stick tightly to the mammary gland. The glass tube is connected with a Marey tambour, thus allowing the volume changes of the test to be recorded on a smoked paper.

*Description of the apparatus* (cf. Fig. 1): The apparatus is composed of a tube of glass (A), the length and diameter of which depend upon the size of the teat to be examined. The upper lip of the tube is polished in order to avoid damage to the mammary gland. The lower part is funnel-shaped and is connected with a long rubber tube which passes between the legs of the cow and is inserted on a Marey tambour, this last allowing one to register the volume changes of the teat. The glass tube is firmly held in the central lumen of a rubber ring which acts as a sucker when a vacuum is applied to it.

This sucker bears a circular groove B, connected by means of a valve G and a long rubber tube to an ordinary vacuum pump. In this way, a vacuum is applied to the whole space B, and the apparatus sticks firmly to the mammary gland.

The sucker is strengthened by a circular band of copper D which presses against the inner side of the lateral rubber wall C of the sucker. The valve G is screwed tightly into the base of the sucker by means of a screw F and a joint E. The vacuum applied should not exceed  $\frac{1}{2}$  atm. in order not to damage the mammary tissue.

*Experimental details:* One quarter of the mammary gland is covered with a thin layer of vaselin, so that the apparatus clings easily to the gland. A vacuum is applied, and the suction continues during the whole course of the experiment. The tube A is connected with the kymograph. Vacuum pump and kymograph are at a distance of about 3 m from the animal. The experiment does not last longer than 30 min., otherwise the animals become irritable and stamp, disturbing the registration.

By means of this method we were able to register the plethysmographic behavior of the teats of about 15 cows. The animals were in a big stable beside other animals. Most of the animals were very quiet and calm during the experiment, and a very good picture of the physiological contractions of the teats was obtained. In a few cases of ill-natured animals it was impossible to perform the experiment, as there was danger that the animal would smash the apparatus to pieces.

Full details of results will be published in "Archives Internationales de Pharmacodynamie et Thérapie".

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### Résumé

Description d'une méthode pléthysmographique permettant d'objectiver sur l'animal vivant les changements de volume des trayons du pis de vache.

## DISPUTANDA

### Zur Theorie des Föhns

In Vol. III/10 dieser Zeitschrift macht W. KUHN auf zwei Ungenauigkeiten in meiner Föhntheorie<sup>1</sup> aufmerksam. Zu seinen Bemerkungen möchte ich kurz Stellung nehmen.

Mit Recht weist der Verfasser darauf hin, daß in der Figur<sup>2</sup>, die das zweite Stadium der Föhnentwicklung zeigt, das Solenoidfeld in dem Bereich nicht richtig gezeichnet ist, wo die Föhnströmung über die Kaltluft aufgleitet. Hier sollten die Isosteren im Vergleich zu den Isobaren tatsächlich talauswärts ansteigen und ein Solenoidfeld mit gegensinniger Drehbeschleunigung erzeugen. In einem solchen ist das Temperaturgefälle entlang einer isobaren Fläche nach Norden gerichtet.

<sup>1</sup> K. FREY, Beiträge zur Entwicklung des Föhns und Untersuchungen über Hochnebel. Diss., Basel 1944, Rentsch Söhne, Trimbach-Olten 1945, S. 84–94. – K. FREY, Eine neue Ansicht über die Entwicklung des Föhns, S. 7–13. Erschienen im gleichen Verlag.

<sup>2</sup> In den erwähnten Arbeiten S. 89 bzw. S. 8.