

*Citation:*

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frozen solid over liquid hydrogen. It is quite probable that the temperature of that solid phase lay much lower than the true melting point of oxygen.

We gratefully acknowledge our indebtedness to Mr. G. HOLST, who was kind enough to undertake the measurement and calculation of the above temperatures.

**Physiology.** — *“On different vagus effects upon the heart investigated by means of electrocardiography.”* By W. EINTHOVEN and J. H. WIERINGA.

A number of electrocardiograms give evidence, that different effects on the heart action can be obtained by vagus stimulation in dogs. Not only the frequency of the heart beats is diminished by stimulation of a vagus nerve, but at the same time the auricle contractions are weakened and often modified.

There can be produced a partial block, i.e. that not every auricle contraction is followed by a ventricle one, as in normal circumstances. but that two or more auricle contractions precede a single ventricle systole.

There can appear a complete block, auricles and ventricles beating in their own rhythm.

The conduction through the right branch of the auriculo-ventricular bundle can be impeded, effecting an atypical systole. In these circumstances the ventricle electrogram shows the shape of the atypical electrograms, which are produced by stimulation of the left branch of the bundle.

It also happens, that the conduction through the left branch of the bundle is impeded, atypical electrocardiograms being recorded of the opposite form.

There finally can be produced impediments that either affect one of the branches of the bundle partially or that are not purely isolated in that branch. In these cases there appear ventricle electrograms, the shape of which differs from those described.

The different effects of vagus stimulation are explained in the simplest way by assuming, that there are various knots of fibres in the trunk of that nerve, some of which being connected with the auricles, some others with the node of ASCHOFF-TAWARA and again others with each branch of the bundle. If some fibres react more strongly than other fibres upon a stimulus, the heart action will be modified in a special way, every knot of fibres producing its own peculiar effect.

It is perhaps also possible to explain the phenomena in an other way. It might be assumed, that only one knot of similar fibres connects the heart with the bulb. If the heart were exposed to no other influences, the stimulation of these fibres would always have the same effect, i.e. a decrease of the frequency of the heart beats or a standstill of the heart. But we have to take into consideration, that as a matter of fact in normal conditions there are still other influences which affect the heart, e. g. those, which are brought about by the accelerator nerves. And the variations in the excitatory state of these nerves might perhaps produce all the differences in the effects of vagus stimulation.

This explanation, which in our opinion is a less probable one, can be tested, if our experiments are repeated with this difference, that previously the nn. accelerantes are sectioned.

The detailed account of our investigation will be published elsewhere.

**Microbiology.** — "*Thermo-tolerant lipase*". By Dr. N. L. SÖNINGEN.  
(Communicated by Prof. S. HOOGWERFF).

Thermo-tolerant lipase means in this communication a fat-splitting enzyme able to resist a temperature of 100° C. during 5 minutes without being decomposed.

Thermo-tolerant lipase is secreted by the microbes of the group of *B. fluorescens liquefaciens*, to which in this relation are also reckoned *B. punctatum*, *B. pyocynum* and *B. liquefaciens albus*. The enzyme is not formed by the group of *B. lipolyticum*, *B. stutzeri*, *B. fluorescens non-liquefaciens*, neither by *Oidium lactis*, *Aspergillus niger*, *Penicillium glaucum*, and *Cladosporium butyri*, all of which secrete a fat-splitting enzyme which decomposes already at 80° C.

The most convenient medium for the above melting bacteria is broth with 3 % peptone, the cultivation being successfully effected in ERLÉNMEYER flasks under aërobic conditions at  $\pm 23^{\circ}$  C.

When such a medium is inoculated with one of the said melting bacteria the microbes will after six days' cultivation have secreted a considerable quantity of lipase so that the culture liquid in a falsted tube at 30° C. shows the lipase reaction already after 1 hour.

The following investigations are made with cultures aged 6—10 days.

Experiments on the decomposition of the microbial lipase by influences