

sure increases from the diastolic to close to the systolic level. And it was shown that under approximately this set of conditions such is actually the case (see Figs. 10 and 11).

But even if Boyle's law did (and it actually does not) determine a diminution instead of an increase in the amplitude of oscillations with increasing compressing pressure, the development of the theory of compression oscillations would not have been affected in the least. For in the further development of the theory it is shown (Figs. 12 and 13) that under the influence of additional conditions obtaining in sphygmomanometry the consequences of Boyle's law become relatively so insignificant that the amplitude of oscillations, instead of increasing, as the compressing pressure rises from the diastolic to the systolic level, actually decreases.

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#### THE UNIT OF PRESSURE

TO THE EDITOR OF SCIENCE: The announcement that the French Meteorological Service has, beginning January 1, 1917, decided to publish atmospheric pressure data in units of force instead of millimeters as heretofore, makes it necessary once more to call attention to the fact that the proper unit for the expression of pressure is not the *millibar* but the *kilobar*. The scientific reasons for this have been given elsewhere at length. Another valid reason, however, may be now mentioned.

There has recently been developed a new type of condensation high-vacuum pump. I refer to that of Professor Langmuir. Pressures as low as  $10^{-5}$  bar have been obtained; and there is little doubt that very much lower pressures can be produced by cooling the bulb to be exhausted, in liquid air, so as to decrease the rate at which gases escape from the walls.

The unit *bar* is here used (and I believe this is the practise of the General Electric Company and will of course be followed by physicists, chemists and others working on allied problems) in its right sense, namely, the accelerating force of one dyne per square centimeter. This is  $10^{-6}$  megabar. In the case of

this type of pump we have a pressure of  $10^{-11}$  megabar or  $10^{-11}$  standard atmosphere.

The millibar then in daily use becomes what it properly is,  $10^{-3}$  bar. The European Weather Services trying to express atmospheric pressures in millibars are in error, and the correct values are one million times greater.

Fortunately, it is an easy matter to change *mb* to *kb*. And this should be done on all tables, charts, etc., published by European meteorologists.

ALEXANDER MOADIE

#### A RELIEF MAP OF THE UNITED STATES

TO THE EDITOR OF SCIENCE: With reference to the suggestion in SCIENCE of March 9, relative to a large relief map of the United States, may I be allowed to state that this is a matter which I often discussed with the late E. E. Howell, who at one time had it under serious consideration? It was then my view, to which I still adhere, that there was a limit in size for such objects, beyond which nothing was gained. This was particularly impressed upon me some years ago while studying some of the maps of celebrated battlefields in German museums. In these large models, details toward the center, on account of distance from the eye, were as inconspicuous as though on a smaller scale and closer at hand. In short, the effect of the enlarged map was wholly lost owing to the necessary distance of the observer. A small map near at hand would be much less expensive, and fully as satisfactory.

With Dr. Clarke's remarks in SCIENCE for March 23 I fully agree, data not being at hand for anything but the most general topographic features over a large portion of the area of the United States. The plan, as it appears to me, is wholly impracticable.

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#### QUOTATIONS

##### RESEARCH IN MEDICAL SCHOOLS

AN important report<sup>1</sup> in this issue of *The Journal* shows that of the twenty-six founda-

<sup>1</sup> "Medical Research in Its Relation to Medical Schools." A Report by Drs. Frederic S. Lee, Richard M. Pearce and W. B. Cannon, composing