force of the magnet material used. We made no attempt to reestablish or disprove the Hamilton Rule as quoted by Professor McKeehan, as it has no bearing whatever on this magnet design. If we cared to be critical, we would ourselves object to the "160 man—72,000 pound weight" statement, as lifting and holding are obviously not the same thing.

We have no objection to Professor McKeehan's academic statements as such, but to title them as he has, or to refer to our design of magnet assembly in that connection implies a lack of fundamental knowledge on our part that is hardly justified. With the interested lay reader the terms coercive force, residual, and maximum available energy may be assumed to have little concrete meaning, but to say that a magnet of a certain size and design will hold 100 pounds conveys something quite real even though only comparative. It was never intended as an absolute measure of magnetic quality.

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ROGER BACON WAS MISTAKEN

IN a recently published, and in general commendable, book I find the following:

> These ancient volumes said that hot water would freeze more quickly than cold water; . . . These are just samples of some of the drivel that was accepted by "learned" men. . . . But Bacon had little regard for authority. He was an experimenter. So he took two vessels exactly alike and filled one with cold water and one with hot. It was a bitter cold day. He set the vessels out of doors. When the cold water froze first Bacon decided that the ancient author was a liar.

But if Bacon had taken a pint of drinking water from his kitchen and a pint of boiling water from his teakettle, had put each pint in similar open tin dishes, and had set them outdoors in zero weather he would have found that the hot water was the first to freeze. The hot water would have cooled very rapidly, partly on account of the rapid evaporation and partly on account of the rapid loss of heat by radiation. The cold water would have evaporated slowly and cooled slowly. Consequently, the hot water would have reached the temperature of the cold water several degrees above the freezing point, and, since a large amount had evaporated, the smaller of the two masses of water was the first to freeze.

Those despised ancients knew a thing or two.

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SCIENTIFIC BOOKS

POLITICAL GEOGRAPHY

The Earth and the State, A Study in Political Geography. By DERWENT WHITTLESEY. xvii + 618 pp. New York: Henry Holt and Company, 1939. $3.75.

GEOGRAPHERS investigate the characteristics that differentiate areas of the earth, whereas historians deal with the differentiation of periods in the time sequence of human events. Space and time, whether in physics or in the study of man, can not in the final synthesis be separated; but because of the widely different techniques, geography and history have developed as separate disciplines. Inevitably they must remain distinct; yet all the more is it essential that scholars in both these fields constantly attempt to reunite them in practice.

Professor Whittlesey's book on political geography is highly successful in maintaining its essentially geographic objectives while making use of historical balance. The book deals with the processes and characteristics which differentiate political areas; and these are traced over a sufficient background of history to provide an adequate interpretation of present conditions.

This new geographical approach to the study of political areas endows such areas with new meaning. The territory of every state or nation includes organic parts that are characteristic of all states. Each state, for example, may be differentiated into such parts as a nuclear core, constituent or administrative regions, problem areas, vulnerable zones, capitals, strategic spots and boundaries.

Professor Whittlesey's discussion of the inherent differentiation of political areas is far from academic. In the chapters on certain specific modern states, an important and readable contribution has been made to an understanding of the problems which trouble the present-day world. New light is thrown on the chaos of Europe—on the relations of Great Britain, France, Germany, Italy and other political units whose struggles are affecting the whole world. It is imperative that the free citizens of our own country should attempt to understand and formulate a policy regarding conditions in Europe, and to this end Professor Whittlesey's book makes a notable contribution.

The thesis is presented that the success, perhaps even the chance for survival, of a state is affected by the pattern of arrangement of the various parts of the political area and of the relations of these parts to the underlying qualities of the land. That the territory which is now Italy has been unified in one state only for 70 years in the modern period, and only for 500 years under Roman rule, whereas this territory was subdivided during the rest of the 2,500 years of Italian history, suggests, "a serious weakness of geopolitical structure not apparent from the map." Pro-