

SCIENCE

Vol. 87

FRIDAY, JUNE 10, 1938

No. 2267

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SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. MCKEEN CATTELL and published every Friday by

THE SCIENCE PRESS

New York City: Grand Central Terminal
Lancaster, Pa. Garrison, N. Y.
Annual Subscription, \$6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary in the Smithsonian Institution Building, Washington, D. C.

THE OCCURRENCE OF CARBON DIOXIDE¹ WITH NOTES ON THE ORIGIN AND RELATIVE IMPORTANCE OF SUBTERRANEAN CARBON DIOXIDE

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OCCURRENCE

THE earliest scientific record of carbon dioxide seems to be that of Pliny,² who in his "Naturalis Historiae" says, "But, by Hercules! the history of the heavens themselves would not be more difficult to relate: the abundance of metals . . . the virtues of medicinal springs . . . the exhalation of deadly vapors (spiritus lethales) either emitted from caverns or from certain unhealthy districts; some of them fatal to birds alone as at Socrate, a district near the city; others to all animals, except to man, while others are so to man also." These openings were generally called vents and, by some persons, Charon's sewers, from their exhaling a deadly vapor. The account continues by telling of a place, in Asia, where no one can enter in

safety, except the "priest of the great Mother of the Gods," and of prophetic caves, where those who enter are intoxicated with the rising vapor so that they can predict future events, as at Delphi.

There is to-day no doubt about the fact that Pliny was referring to the various carbonated water springs and carbon dioxide gas vents, such as the Grotta del Cane at Pouzzoles near Naples and the many similar grottos in various parts of the world. The Grotta del Cane is particularly interesting because it has been known since very early times. It is reported to yield a gas consisting of about 70 per cent. carbon dioxide, 24 per cent. nitrogen and 6 per cent. oxygen. Inasmuch as the ratio of the nitrogen to oxygen is exactly the ratio of these gases in the air, it seems reasonable to assume that there has been an unavoidable contamination with it either at the exit or somewhere deeper under ground.

¹ Address of the president of the Southwestern Division of the American Association for the Advancement of Science, Albuquerque, N. Mex., April 27, 1938.

² Pliny the Elder, 2, 95 (A.D. 77).

Science

87 (2267)

Science **87** (2267), 513-538.

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Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.