this country it is always ecology. It signifies the science of the adaptation of organisms to their surroundings, a field of study in which botanists have been more active than zoologists. Ecology is prominent in every elementary botanical text-book published recently in this country, and every schoolboy if taught by a modern teacher, knows something of it.

W. F. Ganong.

Northampton, Mass.,
March 29, 1902.

The dictionaries are well acquainted with *œcology,* but have not yet discovered the change to *ecology.* This is clearly an oversight, for they are usually glad to aid in the improvement of spelling.

G. K. Gilbert.

[Many other letters have been received pointing out that the word 'œcology' is to be found in the dictionaries. If it did not occur to our correspondent, who is the editor of the New York *Evening Post,* that 'ecology' should be looked up under 'œcology,' it would not to others unacquainted with the term or its etymology; and he appears to have supported his main contention, which was that technical terminology is a serious difficulty in the way of reading scientific literature by those who are not experts in the given science.—Editor.]

CURRENT NOTES ON METEOROLOGY.

FOG IN SWITZERLAND.

As a thesis for the degree of Ph.D. at the University of Bern, Gotfried Streun has published an elaborate report on the fogs of Switzerland (4to, Zurich, 1901). The observations used as a basis for this study were made in 1897 and 1898, and the work was carried on under the supervision of Professor Brückner and of Dr. Billwiller. The lowlands have a maximum of fog in the morning, as a result of the nocturnal cooling of the lower atmosphere, while the mountain summits show a comparatively uniform distribution of fog through the day. A weak afternoon maximum at the latter stations is due to the formation of cumulus clouds in the ascending valley winds. The annual period of fogs is well marked in the lowlands and lower valleys, where there are autumn and winter maxima, but on the mountain summits there is hardly any trace of annual periodicity. As regards the average duration of spells of foggy weather, it appears that single days with fog occur most frequently at the lower levels, where the periods of greatest length come in fall and winter. On the Säntis the longest periods of fog come in spring and summer. At these altitudes continuous fogs frequently last for more than twenty days, while on the lowlands a fog of eight days' duration is a rarity. The general weather conditions under which lowland fogs are formed in winter are distinctly anticyclonic, while those accompanying high-level fogs are distinctly cyclonic, in both summer and winter. In connection with his study of the conditions of fog occurrence, the author finds confirmation of the Hann theory of cyclones. Numerous charts accompany this monograph. They show the frequency of foggy days, and the occurrence of fogs during a remarkable foggy spell from October 26 to November 25, 1897. The effect of topography on the development of fogs is strikingly brought out by these charts.

HAIL PREVENTION.

In the Report of the Chief of the Weather Bureau for 1901 (Annual Reports, Department of Agriculture) Professor W. L. Moore makes a protest against the spread in the United States of the popular delusion that destructive hail storms can be successfully prevented by cannon-firing. Some little time ago Drs. Pernter and Trabert, the well-known meteorologists of the Vienna Observatory, were invited by the Austrian Department of Agriculture, and by the inventor of one of the methods of cannonading, to study the conditions and results of the bombardment on the ground. The investigation which was carried out was as complete as it was possible to make it, and the sum and substance of the report was that nothing positive could be said as to the value of the shooting. Scientific men who cannot visit the scene of the cannonading themselves, and who need any authority for their doubt as to the efficacy of the 'hail shoot-

ing,' may safely accept the conclusions reached by Pernter and Trabert.

NOTES.

AN article on 'The Making of Australia,' in the *Scottish Geographical Magazine* for March recalls the fact that in the early days of exploration in the interior of Australia the discovery of an inland sea was reported. The news was naturally hailed with delight, but further exploration soon showed that no such sea existed. The deception had been caused by a mirage.

FOR November and December, 1901, the *Monthly Bulletin* of the Philippine Weather Bureau appears for the first time in English as well as in Spanish. In the December number there is an account of the earthquake of December 15 at Manila, with a facsimile (natural size) of the curves traced by the Cecchi seismograph.

THE Weather Bureau has recently issued a new edition of its 'Instructions for Voluntary Observers.' This useful pamphlet contains instructions for the erection, use and care of maximum and minimum thermometers and of the rain-gauge; instructions regarding the keeping of records, and a brief discussion of the proper uses of several terms which are often misused, *e. g.,* hurricane, tornado, whirlwind, etc.

A SECOND edition of Eliot's valuable 'Handbook of Cyclonic Storms in the Bay of Bengal,' embodying all the latest results, has been published. The first edition was dated 1890.

R. DEC. WARD.

HARVARD UNIVERSITY.

JOHANN VON RADINGER.

THE obituary notices of Johann von Radinger, who died November 20, 1901, are appearing in the European scientific journals.

Radinger was born July 30, 1842, in Vienna. His education was secured at the Technischen Hochschule, where he became assistant to Professor von Burg before completing his course, and, later, 1867, adjunct to Professor Grimm von Grimburg. He was promoted in 1876, and was made Professor des Maschinenbaues in 1879. In 1891 he was the Director of that great school of engineering, and at his death, his record within its walls extended over a period of thirty-four years. In 1895 he was made President of the Osterreichischen Ingenieur and Architektenvereines.

In all this long professional and scientific career, Radinger exhibited talent, even original genius, industry and great power of achievement. But his spirit was of that lofty and broad and clear-sighted character which, as in the case of nearly every man of genius, while splendidly working in a chosen vocation, could still find opportunity and strength for those avocations which attract all men of mind. He was interested in art, in literature and in all the sciences. He kept himself abreast modern progress in all these departments of human activity. He even found time to do some purely literary work, and his dramatic poem, 'Das Weib des Polykrates,' was produced under most trying circumstances. His genius was recognized by both state and private honors. The Order of the Iron Crown was conferred upon this engineer and man of science as the highest tribute the government could pay to his merits as a man and a public-spirited citizen.

He combined, as do so many men of his profession, practical knowledge and high attainments in applied science with an intimate acquaintance with the pure sciences. He found occupation for a time with Cail at Paris in practical manufactures and, as Konstrukteur, himself directed important interprises. He performed his full share of the great work of his time in the reduction of the art of machine-construction to a scientific system. He was particularly fruitful of good work in the development of the theory and the scientific method of design and construction of details of mechanism, interesting himself particularly in the great work of his generation of making the heat-engine, and especially the steam-engine, an embodiment of the theory and the art, in applied thermodynamics and in applied mechanics. He was a successful leader in the substitution of the exact methods of science in these fields for the old 'rule-of-thumb' ways, in the conversion of the vocation of engineer-