notable resistance, their massive trunks often remaining in place where neighboring coconut palms were broken off or uprooted. The specialized features of royal palms are the smooth rigid trunks, the compact bundle of leaf sheaths protecting the terminal bud, and the stiff, brittle petioles where the leaves break off and thus "shorten sail" in severe winds. New crowns of leaves are put forth in a few months, before the coconut palms can replace their rusty, storm-frayed foliage.

Another resistant type was signalized at Palm Beach, the Mascarene cabbage palm, *Linoma alba,* earlier known as Areca or Dictyosperma, that stood entirely unhurt among the wreckage of the gardens, and began to be known as "the hurricane palm." It is smaller than the coconut palm, with leaves of similar form, but so firm and fibrous as not to be whipped or shredded by the wind. Linoma is a native of Mauritius, one of the Mascarene islands in the hurricane belt of the Indian Ocean, famous a century ago as the setting of "Paul and Virginia," an idyl of tropical felicity published at the beginning of the French Revolution by Bernardin de Saint Pierre, the friend and successor of Rousseau in preaching the return to nature.

Linoma doubtless will be planted in larger numbers, since seeding palms are becoming frequent. As the *chou palmiste* of Mauritius it has repute as a delicious salad, and tinned "palm hearts" have been an article of export from the neighboring island of Reunion. The different kinds of palm hearts might be compared and their dietary uses developed if large groves or shelter-belts were established. Planting the Florida palmetto for its cabbage has been suggested, but royal palms grow much faster and their edible buds are larger.

The native cabbage palmetto (*Inodes palmetto*) and the even more abundant saw palmetto (*Serenoa serrulata*) belong to the series of hurricane palms, and are resistant also to drought, fire and frost, so that vast areas are occupied, that give Florida preeminence as a palm country. The low reclining trunks of the saw palmetto rise in groups from branching underground root-stocks and furnish an ideal cover for embankments, sand dunes or sea coasts, though very difficult to remove in clearing land.

Paurotis is a larger social palm, with slender trunks 20 to 30 feet high forming dense hurricane barriers or growing in graceful clusters, not exceeded in beauty by any other palm. The foliage is not bluish or grayish as in Serenoa, but a shining emerald green, with the long, light-yellow inflorescences rising like jets from a fountain. Paurotis is very intolerant of shade, and in the wild state is restricted to small hammocks in open fire-swept stretches of the Everglades, rarely visited by tourists. The awkward name Acoelorraphe often is applied to Paurotis, but its original use by Wendland in 1879 referred to the saw palmetto.

The new genus of hurricane palms is an example of specialization for an extreme habitat on naked limestone formations of the lower Florida Keys. It is not a social palm, but compact and robust, attaining 25 to 30 feet, notably larger than Thrinax or Coccothrinax, and thriving entirely in the open, beyond the range of other woody vegetation. The outstanding adaptive feature is the development of large cushions of fine interlacing superficial roots at the base of the trunk, like the spongy aerial root-growth of some of the orchids and other epiphytic plants. The leaves are close-veined and firm-textured like those of Linoma, with a chalky white coating of the lower surface, doubtless reducing transpiration. Small white berries are produced in great abundance, and very small seeds, finding lodgment in narrow crevices.

For this most specialized native palm the name *Simpsonia* is proposed as a tribute of regard and admiration for the late Charles Torrey Simpson, whom future times may recognize as a great pioneer naturalist of tropical Florida. The genus is next to Thrinax, but with several diagnostic characters, the massive columnar trunk, often more than a foot in diameter, acervate radicels, cretaceous induments, subsessile flowers, imperforate endosperm and lateral embryo. The type species, *Simpsonia microcarpa* (Sargent) is described and illustrated in Sargent's "Silva of North America" (2: 53) as *Thrinax microcarpa,* from No Name Key, and later in the same work (14: 83) as *Thrinax keyensis,* a larger form from the Marquesas Keys, west of Key West. A thrifty specimen of the type species was raised by Simpson in his garden near Little River.

O. F. COOK

BUREAU OF PLANT INDUSTRY
U. S. DEPARTMENT OF AGRICULTURE

CARBONATION AND CARBONATIZATION

W. A. TARR recently argued against the use in geology of the term "carbonatization," and supported his view-point with a list of several text-books that employ the simpler term "carbonation."[1] The present writer takes no issue with the general argument, as suggested by his adoption of the shorter term in a book that antedates at least two of those in Tarr's list.[2] Every question merits examination on both sides, however, and it is of interest to inquire why some geologists have preferred the longer and less attractive word.

"Carbonation" is the logical derivative of the verb "carbonate," which may appear to relate directly to the formation of carbonates. Unfortunately, several

[1] SCIENCE, 85: 198, 1937.
[2] C. R. Longwell, A. Knopf and R. F. Flint, "Textbook of Geology," Part I, p. 17, 1932.

dictionaries give as their first definition of this verb, "to carbonize; to reduce to carbon." One dictionary (The Universal) gives no other definition, and another (The Century, 1911 ed.) omits any mention of this meaning, giving as the sole definition, "to impregnate or saturate with carbonic acid" (as in the formation of carbonated waters). The New Standard Dictionary gives both meanings listed above, but does not mention the formation of carbonates. Webster's New International, which probably is used as widely as any dictionary in this country, defines "carbonate" (the verb) as follows (1934 ed.): "1. To burn to carbon; carbonize. 2. *Chem.* a, To convert into a carbonate. b, To impregnate with carbonic acid or carbon dioxide." This same dictionary, and others, define "carbonation" as "act or process of carbonating," thus involving the noun in the diverse usage of the verb. Dictionary makers, then, do not by any means give the unequivocal guidance suggested in Tarr's note. Since "carbonize" is given as a synonym of "carbonate," there appears to be dictionary license for using "carbonation" in reference to the accumulation of organic matter in soils or in marine muds; the concentration of fixed carbon in maturing coals; the charging of subsurface waters with carbon dioxide; and the development of carbonates, either by weathering or by hydrothermal action. Although this full range of license is not met in common usage, geologists show no disposition to restrict "carbonation" to one specific meaning.

Probably "carbonatization" originated from a desire to have a term that means unmistakably the development of carbonates. Certainly this desire explains the use of the word by some writers within recent years. Another and apparently older form, "carbonatation,"[3] may have had its origin in the same consideration. Users of these longer words in lieu of "carbonation" probably have felt that clearness is more important than euphony in scientific writing. They need not be disturbed by lack of conformity with the words "hydration" and "oxidation." The English language is not noted for exact consistency in word-form; moreover, any one disposed to quibble in this matter might claim that if "carbonation" and "hydration" refer to production of carbonates and hydrates, then "oxidation" should signify the formation of *oxidates!* It is a more effective argument that "hydration" and "oxidation," as now defined and used, are not in any way ambiguous, whereas "carbonation" may be misunderstood.

Thus the advocates of "carbonatization" are not without justification. They could even compile an imposing list of articles and books to make a case on the ground of usage. However, the writer has used "carbonation" in reference to the formation of carbonates, for the following reasons: (1) The verb "carbonize" and its derivative "carbonization" are adequate in expressing reduction to and impregnation with carbon; if geologists are careful to observe this logical usage, considerable confusion will be avoided. (2) Although the verb "carbonate" and its noun "carbonation" must still do double duty, ordinarily it should be clear from the context whether the formation of carbonates or merely charging with carbon dioxide is intended. However, the more cumbersome "carbonatization" at least has the advantage of precision, and the present writer will not be unhappy if he continues to meet the term in geologic literature.

[3] *Cf.* Century Dictionary, 1889 and later editions.

C. R. LONGWELL

YALE UNIVERSITY

THOSE annotating changes in scientific vocabulary are probably aware of the roots of the English language. Yet workers rarely employ the devices of philology. We, naturally, say "rarefaction," but would not suggest "rarization." Yet the form mentioned recently in SCIENCE, "carbonization," means to render foreign, as of shoes, using rough, uncivilized leather. The chemists can not have thought twice. (Greek, *Karbanos,* page 137, Hamilton, London, Crosby, Lockwood and Co., 1887; *-ize* is Greek.)

The Latin word *carbo(n)* means "coals." Its etymology is thought dubious (White, Ginn and Co., Boston, 1893, page 95). The form *ifaction* is good Latin: "Carbonifaction" or "carbonify."

We do say "temporize." And do not say "temporization." It is possible to say "temporizing." Instead of the term "carbonatization" for "carbonating," why not use it? And for products or processes "carbonators" and "carbonative," "carbonifactors" and "carbonificients," as well as "carbonifacts"? And "carbonatifacts," with "carbonatifactors" and "carbonatories"?

THOMAS HORACE EVANS

THE FIRST RECORD OF THE BLACK WIDOW SPIDER FOR IOWA

IN "Notes on the Distribution of the Black Widow Spider," by L. D. Anderson and H. G. Walker, in SCIENCE for January 22, 1937, Minnesota and Iowa are listed as the only states from which this spider has not been officially recorded. The writer believes that Iowa may be added to the "black list."

In the fall of 1936 a specimen was collected in the warehouse of a Cedar Rapids machinery company. While the author identified the specimen as a female black widow spider, the unusual color markings, combined with the fact that this species of spider had not been reported from Iowa, made him cautious about reporting it without verification. It was first sent to Donald G. Lowrie, of the University of Chicago, who