solution might give lines not characteristic of either, but the position of the lines would be altered by a change of relative concentration. Their position, however, was unchanged, even when such an excess of either of the original salts was present that the lines of the minor component were barely visible.

The appearance of new lines with a fixed position in the sodium sulfate-rich samples reveals the formation of a second double sulfate of the two metals. The composition of this salt has not been established, but it contains more sodium sulfate than represented by the formula $Na_3Al(SO_4)_3$.

The complexity of the pattern of sodium aluminium sulfate indicates a low crystal symmetry and no attempt at an analysis has been made so far. The patterns, of course, bear no resemblance to those of soda alum, which is cubic.

F. A. STEELE

PENNSYLVANIA STATE COLLEGE

ANTS AS PROSPECTORS

IN the course of the field investigation of a number of fluorspar deposits in New Mexico occasional information of value was obtained from ant-hills.

A single instance will serve to illustrate their value. In the Little Florida Mountains near Deming, Luna County, a number of fluorspar veins in volcanic agglomerate have been exposed for a short distance. The veins carry iron and manganese oxides, and the outcrop is often concealed. An attempt to follow one of the larger veins beyond the portion exposed by prospect pits failed until the writer resorted to the examination of the materials of the ant-hills along the general projection of the vein. This method was found to be successful in tracing veins concealed by surface material. A mineral analysis of one ant-hill on a concealed fluorspar vein by the use of Thoulet's solution gave the following results:

Lights; rhyolite, quartz, feldspars, etc.	55.2 per cent.
Fluorite	22.5 " "
Iron and manganese oxides	22.0 " "

Another case in which the materials of ant-hills was of geological use was related to the writer by Mr. W. B. Lang. In an areal field investigation in Idaho in a region of much weathered igneous rock the presence of quartz crystals in the material of the ant hills was found to be a satisfactory criterion for the identification and mapping of rhyolite.

The writer is interested in hearing of other cases in which this method has been found to be of value, as it has doubtless been employed many times.

WILLIAM DRUMM JOHNSTON, JR.

U. S. GEOLOGICAL SURVEY,

WASHINGTON, D. C.

MAINTAINING THE STANDARD AND THE SCIENTIFIC USEFULNESS OF THE NATIONAL PARKS

PROBABLY most of the readers of SCIENCE have, within the last few months, received appeals from certain scientific and "conservation" organizations to write to their congressmen and senators opposing measures to add to the national park system areas which the parties sending out these appeals claim are inferior and unsuited for national park purposes. They warn that there is "serious danger of lowering the standard of the national parks" and claim that no areas should have a place in that park system unless they have natural scenic wonders of outstanding character, such, for instance, as those of the Yosemite or the Yellowstone.

This is a matter in which the scientific men and organizations should do some thinking for themselves instead of letting it be done for them by others. Why should the purposes of the national parks be limited to preserving extraordinary scenic places and to catering to vacationists? Why should they not do some service for the sciences of ecology, zoology, botany, etc., by preserving in their natural conditions some areas that will not be overrun and trampled upon by hordes of tourists? Modern transportation methods are resulting in settling and commercially developing almost every part of our country. The national parks are the chief hope of retaining any tracts in a natural state.

Certainly we should include in the parks the finest and the least spoiled areas that a given region of the country affords, but if it contains no Grand Canyons or Mt. Rainiers that is no reason why every place should be given over to destructive exploitation or why those who have not the time and money to travel long distances should not have such attractive natural scenery as exists in their own part of the country preserved for their enjoyment and for protecting the animals, plants and ecological characteristics of the region for scientific study. No claim can be more preposterous than that the great scenic features of the parks in the western states will lose a particle of their interest or beauty if we also preserve from destruction some of the beautiful though less extraordinary areas in the east or south.

The state of Pennsylvania has recently had to appropriate $450,000 and its citizens have had to raise an additional $200,000 by private subscription to preserve the last remnant of the white pine forest which covered thousands of square miles in the eastern states a couple of centuries ago. How long will it be before we are buying back for national parks at enormous

cost areas that Congress might now set aside for that purpose for nothing?

Nothing could be more satisfactory to those wishing to exploit for their own benefit the resources of the public lands than to have the public imagine that the development of our national park system has almost reached its desirable or practicable limits. That is very far from being true, but unfortunately the Forest Service, which does not wish to give up lands to the parks, and the National Park Service, which desires not the enlargement of the park system but the development of the road and hotel systems of the present parks to improve them as business propositions, are doing their best to encourage such a belief.

At a recent hearing before a Congressional committee the representative of a well-known organization who appeared in opposition to adding a certain area to the park system proved to have no information as to what was on the area in question and could give no reason for opposing its addition other than that certain government officials did not wish it included.

It is a matter of record, which any one so disposed may verify, that the same bureaus and organizations that are now so exercised over the possible lowering of the standard of the parks by making a few small additions to them are the ones who initiated and promoted the legislation in 1921–1923 to lower the standard of the Sequoia Park by eliminating half the park (containing at least two thirds of the sequoia trees the park was established to protect) and opening the area up to commercial use. They have never protested at, or given publicity to, the lowering of the standard of the Yosemite Park, which has been going on for years through the logging and railroad building operations of a big lumber company that have wiped out practically all the finest parts of its forests and ruined from a scenic standpoint two of its three sequoia groves. Publicity would have ended that vandalism. In 1925 and 1926 they initiated legislation to lower the standard of the Rocky Mountain Park by excluding most of the best timbered parts of it. Can they now venture to deny that trimming Crater Lake Park for the elimination of the splendid forests in its southern part is on the program of the government bureaus?

It is not the addition of attractive, even if not extraordinary, areas to the park system that lowers its standard. It is logging, railroad and reservoir building and other commercial developments and also "boundary adjustments" to legislate out timber or other resources desired for exploitation that are lowering the standard of the parks, and doing it in a way that no future regrets or efforts can remedy.

WILLARD G. VAN NAME

NEW YORK

DICTION IN SCIENTIFIC WRITINGS

Now that the pronunciation of "research" is cleared up, perhaps some one can illuminate an obscurity occurring in the writings of even the best scientists. I read that something is "1,000 times larger" than something else. Does he really mean that, or does he mean "1,000 times as large?" The difference in this case is not particularly significant, but becomes so if, for example, the thing compared is "three times larger." I would be inclined to take his statement at its face value until I see that something else is "100 times smaller" than the thing with which it is compared. Now how can anything be more than once smaller than anything else? Would it be any harder to say "one hundredth as large" if that is what is meant?

R. L. EDWARDS

MIAMI UNIVERSITY

A SUBSTITUTE FOR "BELIEVE"

DR. MILLER has suggested that there is an ambiguity in the use of the word "believe" in scientific articles and called for a substitute. Perhaps the word "opine" might do. This word is defined as follows in Webster's New International dictionary:

> opine:—to have, express, form, or hold, an opinion; to give out formally as one's opinion, or to give a formal opinion; to judge; think; suppose.

ELLIS I. FULMER

IOWA STATE COLLEGE

QUOTATIONS

THE USE OF LEAD TETRA-ETHYL

ETHYL has stood her trial, and the jury have returned a Scottish verdict of *Not Proven*. That is the sum and substance of the unanimous report of the Departmental Committee appointed last April to inquire into

> the possible dangers to health resulting from the use of motor spirit containing lead tetra-ethyl or similar lead-containing compounds, and to report what precautions, if any, are desirable for the protection of the public or of individuals in connection with the use or handling of such motor spirit.

The appointment of the committee was the result of a good deal of discussion, both in the press and in Parliament, following the announcement that the Anglo-American Oil Company had produced Pratt's ethyl petrol for ordinary motorists' use with the