deciduous trees. Acts to prevent further cutting of timber were passed in 1720, etc. At present the town of Provincetown forbids passing out of certain beaten paths in the wooded district, to prevent further loosening of the sand. Hundreds of acres have been replanted by the state, the lands of Provincetown having been successively reserved as common property of the colony, province and state; it is only within a few years that the land in actual occupation in and near the town has been granted by the state to the occupants. In reclaiming the sands, *Ammophila* or beach grass has been planted first, then bayberry, then *Pinus rigida,* the native pine of the region. Sand-loving species have since become well established as an undergrowth, but the new growth shows no sign of ever equalling the original. The same is true at Block Island, where the original forest had become established while the island was connected with the mainland. The sand flora is remarkable for the great areas closely covered with *Arctostaphylos Uva-Ursi;* this, with *Rubus hispidus* and some plants of *Corema Conradii,* is the chief means of forming the sand into turf. The species collected in Provincetown numbered ninety-four, among which *Corema Conradii* seems not to have been recorded from that town since Thoreau's visit in 1849.

The third paper was a note by Mr. A. P. Anderson on 'Tuckahoe or Indian Bread.' A specimen was exhibited, a mass about two feet long, made up of seemingly annual additions indicating ten years' growth. Similar specimens have been found in the South along roots of oak and other trees, usually about two feet below the surface, obtained chiefly when clearing land of old stumps. Undoubtedly a fungus growth, and probably a *Sclerotium,* it has never been seen to produce spores. The whole substance consists of a septated mycelium with abundance of white pectose. Europe contains the same species, and another in China has been used there for many centuries in medicine. Experiments by Mr. Anderson showed that portions separated from the roots of the host plant were alive in the soil after a half-year. Where the cortex was removed it was renewed.

A note by Rev. L. H. Lighthipe followed, with a communication from Mr. C. L. Pollard regarding his new species *Viola Angellæ.* He exhibited a water-color showing its spring and summer forms of leaf. An excursion for its collection about the Orange Mountains was suggested.

Edward S. Burgess,
Secretary.

The Las Vegas Science Club.

At the regular monthly meeting, held February 13, Mr. E. L. Hewett presented the results of some studies of Navajo blankets, with special reference to the origin and meaning of the designs. Two blankets were exhibited which showed the Suastika design, which seemed to be especially prevalent among the Navajos, and not to have been derived from the older blanket-makers, the Pueblos. Unfortunately the most modern blankets were less beautiful and less interesting than the old ones, because the introduction of diamond dyes had led to the use of many inharmonious colors, and the makers also seemed frequently careless or ignorant of the meaning of the symbolic figures, employing them in a haphazard way.

T. D. A. C.

Discussion and Correspondence.

Song in Birds.

To the Editor of Science: Two articles on song in birds have recently appeared in Science, from the pen of Mr. W. E. D. Scott, of Princeton University.* The first of these, at least, has been widely read and freely quoted, and as an amateur bird observer I do not like to see such widely influential work passed by without comment, so I beg to offer a few criticisms.

In the first article, Mr. Scott raises the question as to how the song of each bird originates—whether it is inherited or acquired by some sort of education. He then details an experiment which was carried on, evidently with great care, for a period of nearly five years. Finally, he draws from his experiment

* Science, October 4, 1901, p. 522, and January 31, 1902, p. 178.

the reasonable conclusion that "two birds, *isolated from their own kind and from all birds,* but with a strong inherited tendency to sing, originated a novel method of song, and that four birds, *isolated from wild representatives of their own kind and associated with these two, who had invented the new song,* learned it from them and never sang in any other way." This piece of work seemed to show such carefulness in experiment, in observation, and in the conclusion drawn, as to deserve the highest commendation, and it raised the hope of good work to follow.

But this hope was not fully realized in the sequel. The second article is devoted to cases of birds having acquired new notes in various ways. Some of the statements in this paper are of value, but some show a very insecure foundation. For example, Mr. Scott quotes from Miss Emily B. Pellet, in *Bird Lore,* what he considers a 'well-attested case' of talking in a wild rose-breasted grosbeak. But a critical examination of Miss Pellet's article leads inevitably to the conclusion that the grosbeak was not talking at all, it was simply giving bird notes, and imagination put into them the likeness to human speech. This is indicated by the clear, musical character of the notes, by the peculiar non-human accentuation, and by the fact that the words were not repeated in parrot-fashion, but were freely rearranged in different sentences. Even if it were proved that the bird talked, it would be utterly unreasonable to conclude that it had learned to talk while a wild bird; the natural supposition would be that it had learned in captivity and had then escaped. The over-credulity of Mr. Scott in this case leads us to doubt the other examples he cites from unknown observers—those of the whistling and talking of canaries, and that of a duck imitating the call of a turkey. It is most important to know *how close* is the imitation in each case, for there is no subject on which popular evidence is so worthless as on the subject of mimicry. The crudest resemblance in appearance or in sound may be exaggerated into a case of 'perfect' imitation. We can find as much as we choose of this sort of evidence of mimicry.

As to Mr. Scott's own observations, there is one statement to be criticized, and that is that some birds reproduced the *direction* of a sound. What can this mean? It shows that Mr. Scott is not familiar with the psychologic basis of ventriloquism, or he would know that the ventriloquist can not indicate direction by his voice, but only by using some means to attract the attention of the listener to the desired point. And as for birds, it is highly improbable that they ever attempt to indicate the direction of a sound. Direction may be suggested by purely extraneous causes, and an example of this kind fell under my notice last spring which so well illustrates the point that I think it worth giving. I was standing on the top of a bluff overlooking a river-bottom; trees grew thickly in the bottom-land and up the bluff till just over my head. I heard the song of a robin, now loud and strong and apparently almost overhead; then very faint, and coming, as it seemed, from the tops of the trees in the bottom-land. From the robin's habit of singing a loud strain and a faint one alternately, it seemed probable that there was only one songster in this case, but it was almost impossible, at times, to avoid feeling that there were two birds, one almost overhead, and the other below my position, in the tops of the trees by the river. By changing my position I was able to see the bird, and to see that the same bird sang both songs. It was on a branch which overhung the bluff, being between the two positions from which the sound had seemed to come. In singing loudly, it had seemed nearer to me than it really was. Now, if it had been nearer, it would necessarily have been in the branches which were more directly overhead, and therefore I seemed to hear the sound coming down from those branches. But when the song sounded far away, it seemed too far to come from the trees of the bluff, and therefore I was forced to think that it came up from those of the bottom-land below. The case of Mr. Scott's birds is undoubtedly explicable in some similar way. The birds imitated only the sound itself, and the faintness of the sound, or the faintness combined with other qualities of the sound, was associated in his mind

with surrounding circumstances so as to suggest the direction.

While the cases in which Mr. Scott was not critical enough in his work may be distinguished and passed over by the scientist, they may do a great deal of harm in another way —they offer a bad example to amateur observers. And the very excellence of part of Mr. Scott's work may become deleterious by increasing the influence of these bad examples. In reading the interesting nature books which are so numerous nowadays, it is a bitter disappointment to find, in one author after another, statements which are made without a secure foundation, and which therefore throw a shadow of doubt on all the assertions of that author. It will be truly deplorable if this sort of thing is to be encouraged by a specialist in ornithology in one of our universities. We expect that such a man will do much toward correcting the popular error, and will never contribute to it.

Wallace Craig.

Hull Zoological Laboratory,
March 4, 1902.

A GEOGRAPHICAL SOCIETY OF AMERICA.

Professor Russell's plan of a general geographic society (Science, January 31, 1901) is timely and deserves the careful attention of all the friends of geography in America. It is the very thing that is needed to unify the widespread interest which is daily waxing stronger in this country. A multitude of schools ask for a better presentation of geography, and urgent demands are made for teachers in the special fields of physiography and commercial geography. The universities have been slow in providing the training, and earnest teachers, making every effort to widen their margins and to increase their efficiency, have had great difficulty in finding the published material which will keep them in touch with what progress the specialists are making. Even the specialists have been slow to enroll themselves as geographers; their primary allegiance has been with the geologists, economists, botanists and the like. The field of general geography has never had adequate recognition by the very masters who have done most of the constructive work giving the general science body and impulse in this country.

It will mean much therefore if all this great headless body of earnest workers in the common field be given a head and a local habitation and a name. And if then all those persons of superior training and abilities be organized into a society having at heart the welfare of geography in the New World, its status and dignity; a warm interest in the furtherance of exploration, survey and charting of lesser known regions; the making of adequate monographs of restricted areas or topics and the publication of this high class work under conditions calculated to insure scientific and literary value; and if then with a right association of interests consequent wide distribution of published records be assured, we shall indeed have taken a long stride in advance toward a healthy establishment of geography, as a coherent body of interests, on the high plane it occupies in some of the countries abroad.

Such an organization as Professor Russell suggests will make all this growth possible. It is a far-sighted plan, too, to make the association wide enough to include both Americas. For if we include Mexico and the rest of Middle America we could have no good reason for barring the remoter parts of Latin America. There is a growing bond of interest between the various parts of the New World, a bond which every added year will strengthen more and more. It will be a wise plan to help this movement in every way; and here is an opportunity to create a common interest in a great subject in the whole of the western world.

To insure the high quality and standing of the Society, there is no doubt the qualification suggested by Professor Davis (Science, February 21, 1902) is essential. Let us have the first move made with care, and standards set so high that the dignity and authority of the Society will be at once established, and membership an honor and a privilege to be worked for. To this end the suggestion of Mr. J. Stanford Brown (Science, March 14, 1902) is pertinent, that is, let us have two classes of membership, one the active, voting members, who, by the way, may be called 'fellows,' and