more than one fifth were very considerably bored. Of those not attacked, a number stood so far inshore as to be but little exposed to the action of the borers.

These jackets were in general of a less than average grade of cement mortar, from 2 to 5 inches in thickness, some being decidedly poor, others fairly hard, as indicated by the fact that some of the jackets had given service in sea water over a period of fourteen years. Samples of the best mortar in which borers were found showed an air penetration of 1/16 inch in seven weeks when tested with phenolphthalein. Mr. A. A. M. Russell, testing engineer to the California State Harbor Board, has very kindly made a crushing test of a sample of one of these jackets, finding the crushing strength of a specimen 2½"x3½", 4" high, to be 1,726 pounds per square inch. Mr. Russell reports the grading of the aggregate to be as follows:

Screen	*Percentage*
10- 20	1.78
20- 30	.89
30- 50	4.46
50- 80	51.78
80-100	16.07
100-200	16.07
Pass 200	8.94

The species occasioning most of the damage here was found to be *Pholadidea penita* Conrad, a borer which occurs in suitable habitats from Alaska to Lower California, and possibly even to Ecuador.[1] Specimens taken from these pile jackets averaged about 4 cm. in length, with a maximum length of 7 cm. and a maximum diameter of burrow of 3.2 cm. In some cases the borers had gone entirely through the jackets until in contact with the wood within, but none had continued boring into the wood.

The nestler *Petricola carditoides* Conrad was found somewhat commonly in these jackets, but presumably only in old pholad burrows. *Platyodon cancellata* Conrad was also found sparsely, in badly disintegrated concrete.

The wide distribution of *Pholadidea penita* suggests possibilities of attack on concrete marine structures in other Pacific Coast harbors. Indeed, reports of such action by this or a similar borer at such widely separated points as Anchorage, Alaska, and Panama, have recently come to hand.

In jacketing piles, it has often occurred that the concrete has been "drowned," either by the presence of too much water in the mix, or by depositing the material in water, causing segregation and laitance, and rendering such structures especially liable to borer action. The probabilities of attack on well made precast piles and other high grade concrete structures hinge upon whether the action of the borers is mechanical or chemical, or both. If it be predominantly chemical, density of the material will probably serve only to make the boring slower. It appears, at any rate, that the use of concrete for marine construction is not as yet a final solution to the marine borer problem, at least in localities where rock boring mollusks occur.

CHARLES A. KOFOID
ROBERT C. MILLER
ZOOLOGICAL LABORATORY,
UNIVERSITY OF CALIFORNIA

[1] Dall, W. H.: Proc. U. S. Natl. Museum, *37*, 276. 1910.

AN INTERESTING LIVERWORT

A SHORT time ago, one of my students, Mr. T. Domoto, brought to the laboratory a peculiar liverwort which at first I had some difficulty in identifying. The specimens were collected in a nursery in Oakland, owned by his father.

A further investigation of the plant showed that it was undoubtedly the curious *Monoselenium tenerum*, Griffith, described in detail by Goebel[1] about a dozen years ago. So far as I know, the plant has not been reported since that time.

Goebel's specimens were found growing in earth sent from Canton to Munich with specimens of tea plants. The liverworts were first noticed some time after the arrival of the material in Munich.

Goebel decided that the plant was Monoselenium, of which the only account was in the posthumous notes of Griffith.[2] No specimens are known in herbaria; but Goebel concluded from Griffith's description and figures that Griffith's *Monoselenium tenerum* from India was the same as the Canton plant.

Monoselenium closely resembles a small Du-

[1] Flora, 101: 43-97. 1910.

[2] Posthumous papers. Part II (1849)—Notulæ ad Plantas Asiaticas, p. 34.

mortiera, and in spite of certain differences which Goebel points out, I am inclined to believe that the two genera are pretty closely related. In Monoselenium there is a marked degeneration of the sporophyte, the elaters being quite rudimentary. Spores and elaters of the Oakland specimens agree exactly with Goebel's figures.

There can be no doubt that the Californian specimens have been introduced with nursery stock from China or Japan, and a careful search in those countries would probably show that the plant is not an exceptionally rare one.

DOUGLAS HOUGHTON CAMPBELL
STANFORD UNIVERSITY

COAL BALLS

I AM anxious to obtain information on American coal balls, such as have been found mostly, up to now, in the coal seams of England and northern France, and which were used by J. Lomax in Bolton, England, for his magnificent thin sections of paleozoic plants. The coal balls have not been reported anywhere in North American coal seams, but they exist here. A splendid specimen of such a coal ball was obtained by the Illinois State Geological Survey at Harrisburg, Illinois, O'Gara Mine No. 9, and others were collected by myself in coal seam No. 5 in Illinois and coal seam No. 9 in Kentucky. Recently a coal ball from Newcastle, Texas, was sent to me by W. E. Wrather. These so-called coal balls are well preserved and petrified plant tissues which appear in brown or black lumps in upper portions of coal seams. Their preservation is due there to penetration by silica or calcium carbonate. They allow microscopic examination of the most minute details. I think some of the bone coal, called so by miners, and quoted occasionally in literature, may be coal balls.

It would be extremely gratifying if a sufficiently large number of American coal balls would be discovered to increase materially our knowledge of carboniferous plant morphology which is now exclusively based on English and French material. I shall be very glad to receive any communications from coal operators or state surveys which may lead to the discovery of deposits of coal balls.

A. C. NOÉ
UNIVERSITY OF CHICAGO

A FUND FOR GERMAN AND AUSTRIAN LABORATORIES RAISED BY THOSE WHO HAVE WORKED IN THEM

"We should rather through the instrumentality of men of science soften the asperities of national hostility."—Humphry Davy to a delegation from the French Academy which went to London in 1807 while war was in progress between England and France.

The desperate financial condition of the German and Austrian laboratories is well known. If any one desires to help a specified laboratory or a specified head of a laboratory, any contribution given will be sent as from the donor directly to the individual in charge of such laboratory.

The following individuals were the first to subscribe to this fund, which already reaches $2,175:

Abel, J. J.; Baldwin, E. R.; Carlson, A. J.; Chittenden, R. H.; Conner, L. A.; Cushing, H.; Dakin, H. D.; Farnam, H. W.; Greenwald, I.; Hatcher, R. A.; Howland, J.; Kerr, A. T.; Kingsbury, B. J.; Lee, F. S.; Lilienthal, H.; Lusk, G.; Marine, D.; Means, J. H.; Meigs, E. B.; Mendel, L. B.; Niles, W. L.; Palmer, Mrs. W. W.; Peabody, F. W.; Pierce, H. F.; Pike, F. H.; Pratt, J. H.; Pritchett, H. S.; Ringer, A. I.; Robinson, C.; Scott, E. L.; Shaffer, P. A.; Simpson, S.; Sollman, T.; Stern, Miss F.; Talbot, F. B.; Tiffany, Mrs. C. L.; Wallace, G. B.; Wilder, R. M.; Woodyatt, R. T.

Checks of $5 to $150 have been received: any sum will be welcomed.

Make checks payable to Graham Lusk, *Treasurer,* 477 First Avenue, New York City. The fund will be closed on May first.

GRAHAM LUSK
CORNELL MEDICAL SCHOOL

QUOTATIONS

SCIENCE AND THE PACIFIC

ON the invitation of the Commonwealth Government, which has promised the sum of £5,000 towards the cost, a Pan-Pacific Congress is to be held in Melbourne and Sydney in August and September of this year. The National Research Council of Australia has arranged an extensive program and invitations are being issued to the scientific men of countries bordering on, or having interests in, the Pacific. The Pacific Ocean is a geographical and biological unit, and many problems of