Table 1. References to foreign works by geologists from various countries.

Nationality	Books (No.)	Percentage frequency of references to foreign workers					
		10 (%)	11–20 (%)	21–30 (%)	31–40 (%)	41–50 (%)	51 (%)
American	100	75	18	5	2		
British	100	11	36	33	9	5	6
German	50	8	54	18	8	4	8
French	50	10	24	30	18	4	
Dutch	50	4	8	16	8	16	48
Swiss	50	14	12	18	22	14	20

ences made in publications that show an amazing lack of recognition of foreign works. Admittedly on a national population basis, America likely has more scientists than other nations, but then we are not concerned with mere quantities.

I have gone carefully through 100 American textbooks and standard references in the field of geology, to ascertain the listings given of foreign workers—not necessarily foreign publications. Comparisons were made with 100 British books and 50 each from Germany, France, Holland, and Switzerland. The results are shown in Table 1.

A glance through the respective journals of these countries illustrates a more serious provincial attitude on the part of American geologists. It is idle to harp about the Europeans' greater facility in languages and at the same time insist that all American science students be forced to learn some European language, at least for reading purposes.

During recent years, in visiting many universities in Europe and Asia, I have seen in various science departments wall charts, published in the United States, depicting such things as the divisions of the science of physics, highlights in the history of biological evolutionary thought, discoverers in the field of electromagnetism, and so on. In one chart showing discoverers in that particular science field, I noted that of 94 names listed, a mere 74 were Americans, and not a single Britisher was mentioned. It is bad enough that American students should be misinformed to this extent, but doubly serious when foreign students are handed this sort of propaganda. Although I do not wish to belittle the contribution of America toward science in general and geology in particular, is it not time to place such contribution in its true perspective, such as Marie Curie working in a cold, leaking, dingy laboratory on an infinitesimally small budget versus America with its air-cooled, centrally heated, luxuriously furnished laboratory struggling along on a $10-million grant?

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21 February 1956

Serum Protein Concentrations in the North American Negroid

Anthropological and medical differences between Negroids and Caucasoids have been the subject of much medical discussion (*1*). Studies on the chemical composition of blood have shown no consistent variation except in the concentrations of plasma proteins. Surveys in Africa (*2*), Jamaica (*3*), and the United States (*4*) report that Negroids have lower serum albumin and higher serum globulin values than Caucasoids residing in the same region. Male Caucasoids were found to have higher serum cholinesterase activities than a comparable group of North American Negroids (*5*). The increase in the globulins has been mainly in the gamma globulin fraction. These differences have been attributed to infection with parasitic or tropical disease, liver disease, malnutrition, and possibly a genetic variance.

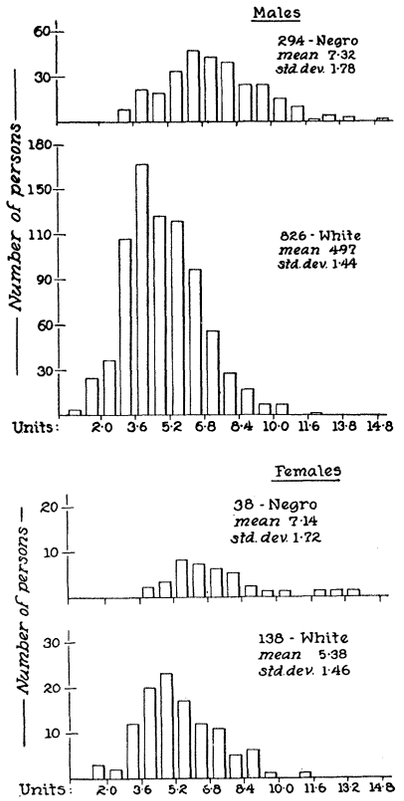

Fig. 1. Serum gamma globulin of Negroids and Caucasoids measured as zinc turbidity and expressed as Shank-Hoagland units.

A blood-donor screening study for the detection of carriers of viral hepatitis in progress at the Hospital of the University of Pennsylvania provided an opportunity for comparison of Negroids and Caucasoids living in a nontropical area (*6*). Thirty-six percent of the Negroids and 63 percent of the Caucasoid donors were born, and had always lived, in the vicinity of Philadelphia. The donors, who ranged in age from 18 to 59 years, were accepted only if there was no history of jaundice, liver disease, syphilis, or serious systemic illness, and if the hemoglobin was greater than 12.5 g percent. Samples of blood were collected, and the following tests were performed (*7*): serological tests for syphilis, total and prompt direct (*1′*) serum bilirubin, thymol turbidity and flocculation, cephalin-cholesterol flocculation, and zinc sulfate turbidity (*6, 8*).

The distribution of values for the zinc turbidity in Shank-Hoagland units of those donors who had normal results for all other tests are plotted in Fig. 1. The mean value for the Negroids is much higher than that of the Caucasoids ($p < 0.001$). This difference is present irrespective of age or sex. Among the Caucasoids, the females have a significantly higher mean than the males.

In addition to the zinc turbidity test of Kunkel, which correlates with the concentration of the gamma globulin fraction (*9*), two other methods of measuring gamma globulin were used. Analysis of the serum of 31 Caucasoid and 25 Negroid donors by the ammonium sulfate turbidity test (*10*) gave values of 2.50 ± 0.16 units for the Caucasoid and 2.82 ± 0.23 units for the Negroid serums ($p < 0.01$). Zone electrophoresis (*11*) of the serums of 45 Caucasoids showed a mean of 18.04 ± 4.41 percent of gamma globulin and 21.75 ± 5.09 percent for the 45 Negroids tested ($p < 0.01$). The Negroids also had a lower mean concentration of serum albumin ($p < 0.05$).

The finding of significantly higher mean concentrations of gamma globulin by these methods agrees with previous reports. However, the subjects in the present study were all voluntary donors who came from localities in which both racial groups were living in a similar environment in a region where there is no general malnutrition or endemic disease. No abnormalities in liver function were detectable by a series of tests. This suggests that the higher mean concentrations of gamma globulin found in Negroids may be the result of a genetic factor. The differences shown by the North American Negroid population are large enough to require the use of separate standard

values when gamma globulin and other serum protein measurements are made.

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Green Crabs and the Redistribution of Quahogs

In a recent report, Dow and Wallace commented on the effects of winter storms in redistributing populations of the quahog, *Venus mercenaria* L. (*1*). The probable effect of water currents in accumulating masses of young quahogs has been indicated elsewhere (*2*). Recently it has come to light that crabs also constitute a factor in the redistribution of a quahog population.

The green crab, *Carcinides maenas* (L.), is a voracious predator upon clam and quahog populations in northern New England waters (*3, 4*). Although other factors are also involved, its progressive increase in the Gulf of Maine has roughly paralleled a serious depletion of the soft-shelled clam, *Mya arenaria* L. (*5*), and the crab is an important factor in the reduction of seedbeds of the quahog (*4*). Data obtained during the fall of 1955 indicate that, in addition to its importance as a shellfish predator, the green crab plays a minor but appreciable role in redistributing quahogs in an area where crabs and quahogs occur together.

On 16 Sept. 1955, while repairing a fence impeding the entrance of crabs into Brickyard Cove, Sebascodegan Island, Me., we collected a green crab that was moving about with a 1-in. quahog pinched onto the tip of one of its walking legs. When the crab was lifted from the water, the quahog pinched down more tightly on the crab's leg, thus removing the tip of the terminal segment. The same action left a small circular nick, marking the two valves symmetrically, at the edge of the quahog shell. It was then noted that several quahogs lay exposed on screening that had been placed on the bottom behind the fence to reduce tidal erosion and on which the crab with the attached quahog had been collected. Of a sample of 32 of these exposed quahogs, 26 were living, and in 24 of these the edges of the valves were scarred by nicks similar to that described. In the other two living specimens, growth had continued after scarring so that each valve was marked near the edge by a semicircular scar, and its concavity was filled in by new growth.

It is assumed that the quahogs found on the flat screening had been transported there by the movements of crabs and that once over the screening the quahogs had either been shaken off or had amputated the tips of the crab legs, thus freeing themselves. It is further assumed that a quahog becomes attached to a crab's leg when a crab inadvertently places a leg tip between the open valves of a quahog in the region of the pallial sinus as the latter rests upright in the mud.

These assumptions are strengthened by the following observations. Small quahogs are frequently collected about the periphery of Quahog Bay, of which Brickyard Cove is an arm, each with a small circular nick in the edge of the shell in the region of the pallial sinus. When a quahog is opened immediately after it has pinched off the tip of a crab leg, it is found that the tip lies between the valves near a circular nick at the edge of the shell. Green crabs with missing leg tips occur frequently in the area. Robert L. Dow and Dana E. Wallace of the Maine Department of Sea and Shore Fisheries have observed a horseshoe crab, *Limulus polyphemus* L., at the moment that it picked up a quahog passenger in the manner postulated for the green crab; they have photographed the specimens involved.

After the observations of 16 Sept., we collected a random sample of 1000 quahogs, all under 5 cm and more than 1.5 cm, in Brickyard Cove. Of these specimens, 29, or 2.9 percent, demonstrated a circular nick at the edge of the shell, or a shell bilaterally marked by semicircular scars that had been filled in by subsequent growth. Of the specimens thus far examined, the smallest in which the nick, either peripheral or elsewhere, has been detected has been 2 cm in length; the largest, 3.7 cm.

The role of the green crab in redistributing the quahog may not be especially important to the whole ecology of either, but it may be that something of a beneficial effect is introduced by the green crab in thinning crowded populations, since it would be in such areas that the walking legs would seem most likely to enter the valves. On the other hand, the breaks introduced may allow entrance to foreign invaders or to the action of green crab pincers, thus increasing the susceptibility of the quahog to destruction. However, a sample of several empty scarred valves that were collected showed that the nick was in a peripheral position in but one case.

One value of the observations reported here may lie in a possible correlation between frequency of the scar reported and the relative populations of green crabs and quahogs. On the other hand, the frequency of missing leg tips of the green crab in a quahog area might reasonably be presumed to be related to the density of small quahogs in the feeding zone.

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22 December 1955

Serotonin-Releasing Activity Limited to Rauwolfia Alkaloids with Tranquilizing Action

Previous findings (*1, 2*) have led us to postulate that the clinical effects of reserpine are mediated through serotonin (5-hydroxytryptamine), a substance that is normally present in the brain, and that serotonin may have a role in brain function. This concept is based in part on the observation that reserpine liberates serotonin from its body depots. The evidence presented in this paper strengthens the concept by showing that of a number of centrally acting drugs only *Rauwolfia* alkaloids exerting a tranquilizing action effect the liberation of brain serotonin.

Rabbits received the various drugs intravenously and were killed 4 hours later. Their brains were removed as rapidly as possible, and serotonin was determined fluorometrically (*3*).

In Table 1 is shown the effect of a