ogists (and other scientists) can receive the communication. With Esperanto the same is at present true, with the additional limitation that no communications are being offered. But I should be willing to join my colleagues in any generally attempted solution, even if it means sitting up nights with an Urdu grammar or a Quechuan wordbook.

ANCEL KEYS

Laboratory of Physiological Hygiene
University of Minnesota

The Hemolytic Substance Present in Animal Tissues

TYLER (*1*) has recently reported hemolytic activity in saline extracts of fetal and adult guinea pig liver. The lytic activity varied in different fractions of the extracts, which were obtained by centrifugation at 2,500 rpm and at 25,000 and 100,000 × *g*; there were also relative differences between adult and fetal extracts. This was taken as "substantial evidence" of differences in the rate of enzymatic (hemolytic) activity between fetus and adult, which were considered not to be due to differences in enzyme concentrations but in inhibitor.

Tyler makes the following statements and suggests alternative theories concerning the nature and mode of action of the hemolytic substance present in animal tissues:

1. An unidentified hemolytic agent occurs in normal and pathological tissues.

2. Plasma or serum and possibly brain contain inhibitory substances of the hemolytic agent, which are thus far undefined.

3. Practically no attention has hitherto been paid to intracellular inhibitors of hemolysis.

4. The lytic agent is an enzyme acting directly on the cell membrane, which is its substrate, with inactivation resulting from the ability of inhibitors to act as competitive substrates; or

5. The lytic agent is enzymatically produced, with inhibition taking place through the formation of an inhibitor-lysin complex.

The following facts (*2–7*) refer to each of the above-mentioned points:

1. The hemolytic substance present in plasma and animal tissues has been isolated in crystalline form (*2*) and identified as *cis*-vaccenic acid [$CH_3 \cdot (CH_2)_5 \cdot CH{=}CH \cdot (CH_2)_9 \cdot COOH$] (*8*).

2. The inhibitors of hemolysis present in plasma are albumin globulin, calcium, cholesterol, and lecithin. Their quantitative interrelationship with the hemolytic acid has been examined. Phosphate and, in pathological conditions, hematin and porphyrins act as accelerators. Extraneous circulating hemolytic acid has no effect on erythrocytes under normal conditions because of a large excess of inhibitors in the plasma. It may, however, be a contributory factor to hemolysis in certain pathological conditions, as, e.g., in blackwater fever (*4*).

3. Normal erythrocytes contain the hemolytic acid, which is most likely related to their normal life span. Hemoglobin and stromatin act as powerful *intracellular* (intracorpuscular) inhibitors of lysis during most of the life of the normal erythrocyte. Only in aging erythrocytes does the hemolytic acid seem to become dissociated from its complex with stromatin.

4. No experimental evidence exists for the contention that the body contains a hemolytic enzyme, whose substrate is the cell membrane. As this is a lipoprotein, it can only be acted upon through one of its constituents. The supposition that the enzyme is proteolytic can be excluded. It could therefore be solely concerned with the degradation of the lipid component, as was first suggested by Bergenehm and Fahraeus (*9*). However, the claim advanced by these authors in favor of the existence of (hemolytic) lysolecithin produced from lecithin by an enzyme (i.e., lecithinase) was not supported by direct experimental proof—as, for instance, isolation of either the enzyme or the lysolecithin—but was based on indirect evidence and analogies. These have not stood the test of critical reexamination. Their claim must therefore be abandoned.

5. The claim that the hemolytic agent, though not an enzyme, is enzymatically produced, may be made for innumerable substances that are not ingested but changed or synthesized by the body.

As the structure of the hemolytic acid present in animal tissues is now established, there seems to be no need of further speculation regarding its nature.

H. LASER

Molteno Institute
University of Cambridge

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Professorships in Foreign Countries

OPPORTUNITIES for foreign exchange professorships and visiting professorships are plentiful. The Fulbright Exchange Program is expanding; the Smith-Mundt Act provides for visiting professorships; teaching opportunities exist in the American Military Governments of Japan and Germany; and many positions are available through the Unesco fellowships, scholarships, and educational exchange programs. My experience in this type of work began in 1946–47 when, as consultant in biology for AMG in Korea, I had the opportunity to teach in several Korean colleges and universities (*Science*, **107**, 31, [1948]). In June 1950 I was visiting professor of parasitology at Seoul National University Medical School. In Japan, after the evacuation, I discussed at length the experiences, impressions, and conclusions of several others who taught in Korea. Combining their ideas and mine, I here present some general reactions and recommendations with the hope they will help anyone who plans to accept a foreign professorship.

An interpreter is usually required. This means that less than half as much material can be presented during each lecture as one is accustomed to give, especially as it is necessary to speak slowly and repeat often. I found it a great help to write out all introductory remarks before each lecture and to give them to the interpreter to study. He was fairly good with technical material, for it was in his own field of specialization, but he was very poor at translating informal remarks.

Reliance on formal lectures alone has been a traditional practice in Korea. Laboratories were seldom used. The American visiting professor of chemistry was asked to give two sections each of 5 lectures in inorganic chemistry, 5 in organic chemistry, and 5 in biochemistry, and to handle a seminar. In addition, he was supposed to supervise the laboratories that he insisted on scheduling. He finally was able to reduce the lectures to a total of 12 per week, which was still too heavy a load for efficient teaching. It would be wise to have an agreement in writing concerning teaching load before accepting such a position.

Textbooks, laboratory manuals, mimeographed material, drawing paper, and even pencils were scarce in Korea. I took with me enough stencils for my work. Almost all Korean students are able to study something written in English, as long as they have sufficient time and a dictionary. My students begged me to give them complete lectures mimeographed in English word for word as I would give them orally. I suspect that the request reflected a desire to practice English. I mimeographed a complete outline of each lecture, which I gave out several days in advance. In one class of 60 students only 6 had textbooks, none had a laboratory manual. I wished I had brought more sample manuals, charts, and other teaching aids.

Grading was a problem. In 1947 I turned that job over to my assistants, since most of the answers to questions were in Korean. I helped in making out examination questions and in setting up identification examinations in the laboratory. I tried to explain systems of grading used in this country. I have reason to believe, however, that the only students to fail were those who had the wrong political faith. In 1947 the students I talked to had never heard of an objective-type examination. By 1950 many had taken true-false quizzes. Whether this was progress depends on the point of view.

Equipment was spotty. It is well to anticipate a minimum of laboratory or lecture-demonstration equipment. We had good Japanese microscopes and a few good slides. We could have used many more slides, staining fluids, and glassware. We had no microscope lamps and only one centrifuge. If at all possible, one should take equipment and supplies with him; some of the grants for professorships include funds for this purpose. Library facilities cannot be depended upon. It is advisable to take the most needed of one's own reference books. (The Communists got a dozen of mine!)

Understanding of, and sympathy with, the Korean people are of fundamental importance to success in that country. I believe that the visiting professors, as a group, were well prepared in this respect. Unfortunately, many of the other Americans were not. It was astonishing to find so many Americans who came to Korea with practically no knowledge of the country or its people—not even the knowledge that could be gathered from a rapid reading of an appropriate page or two in an encyclopedia. What is much worse, these people did not care to learn anything about Korea. Every American abroad represents our country. We must not forget it. It is especially important in an Oriental country. A native student has a tendency to believe that all Americans are like his American professor. The only way a visiting professor can keep faith with those at home is to show by his words and conduct that he has a genuine liking for the native people and that he has taken the trouble to learn something about their country, their habits, their language, and their philosophies and ideals. If he does not do this, he is not the man for the job.

GLENN A. NOBLE
California State Polytechnic College
San Luis Obispo

The Rectangular Earth

IN THE discussion entitled "The Bible and the Earth's Shape," by Carl S. Wise (*Science,* **113,** 128 [1951]), Mr. Wise left out the one verse in the Bible that probably caused all the comment. This verse is in Rev. 7: 1 and reads as follows: "And after these things I saw four angels standing on the four corners of the earth, holding the four winds of the earth, that the wind should not blow on the earth, nor on the sea, nor on any tree."

It is quite evident that the description above is not that of a sphere, or of anything round, or of a cube, but that of a rectangle. Since it would fit only one form, that of a flat area with four corners, the inference is that the earth was believed to be like a rectangular-shaped pancake.

CYRUS N. RAY
Abilene, Texas

Robert D. Wright, professor of social and environmental medicine at the University of Virginia, has been awarded a fellowship by WHO to study social medicine and human ecology in Europe.

Recent visitors at the National Bureau of Standards were **Arthur Fage,** superintendent of the aerodynamics division of the National Physical Laboratory, Teddington, Eng.; **Percy Tham,** director, Photogrammetric Division, Royal Geographic Survey Office, Stockholm; **H. U. Dutsch,** physicist, Lichtklimatisches Observatorium Arosa, Zurich; and **Gustave Guanella,** chief engineer, Brown Boveri Co., Baden, Switzerland.