Bing branches. These inoculations were made in August, and by the following April the ring-spot virus had moved out of the Bing branch, as evidenced by a streaking type of necrosis that involved about one third of the tree. The ring-spot virus had spread more rapidly and in a more systemic manner by this method of inoculation than by direct budding into the Shirofugen. The extent of the spread of the ring-spot virus was determined by slashing the bark and examining the exposed tissue for necrotic streaks.

Buds taken from the area showing necrotic streaking and placed into Shirofugen and Bing cherry showed both viruses to be present. At this time buds taken beyond this area contained neither virus.

In July the other Bing branches that had not been inoculated showed early rusty mottle symptoms, and the necrotic streaking caused by ring-spot virus had not yet reached the Shirofugen immediately below these branches. Buds transferred from these branches to virus-free Bing trees and Shirofugen demonstrated that the two viruses have been separated. Mild rusty mottle was established in a virus-free Bing without the ring-spot contaminate.

The successful separation of the mild rusty mottle virus from the ring-spot complex has made possible the study of the mild rusty mottle virus in peach. When Early Muir peach trees were inoculated with mild rusty mottle free from latent ring-spot virus, the results were entirely different from those of the original inoculations before the separation of the two viruses. The peach showed none of the severe shock reaction (Fig. 1, *B*) which is now known to be a symptom associated with certain strains of ring-spot virus. The mild rusty mottle virus was carried without apparent symptoms (Fig. 1, *A*). Return inoculation from peach to Bing cherry demonstrated the virus to be carried without symptoms in peach; the ring-spot virus may be carried without symptoms in cherry.

These findings emphasize the importance of recognizing ring-spot virus as a common contaminate in most stone fruit virus sources. Before these viruses can be studied as single entities, the ring-spot complex must be removed. The Shirofugen technique described offers a possible method of accomplishing the separation.

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Comments and Communications

The Problem of an International Language

IT STRIKES me that Ancel Keys is on thin ice when he rebukes the editor of *Acta Physiologica Polonica* for chauvinism in printing in Polish and not giving résumés in other languages—especially English!

What American journal—at least the biological ones I am familiar with—condescends to print foreign language résumés? None. How many American scientists really bother to learn other languages so that they are facile in them? Very few. And I am not innocent, either.

And what if the first issue is devoted to Pavlov? A great physiologist is entitled to an anniversary volume, it seems to me.

When Dr. Keys publishes a paper in Polish, or at least with a Polish résumé, then and not till then, do I think it proper for him (or anyone) to complain of chauvinism on someone else's part.

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IN transmitting his letter written to Professor W. Missiuro of the Akademia Lekarska in Warszawa, Poland, on the occasion of the publication of Volume I of *Acta Physiologica Polonica* (*Science,* **112**, 724 [1950]), Ancel Keys stated: "I, at least, am greatly disturbed to see such evidence of growing chauvinism in science in some parts of the world and feel we scientists should be alert to express such concern."

While one may regret the fact that only 20, or fewer, physiologists outside Poland and Russia can read articles in Polish, this seems to me no justifiable reason for denying the editors of the new journal the right to publish in the tongue most easily used by contributing authors. If allowed to use their natural tongue many writers will publish much of scientific value that would remain unpublished (and therefore totally inaccessible) if it had to be translated into English or German, as Dr. Keys has suggested. It is a much more difficult thing to write accurately and fluently in a tongue other than one's own than it is to garner meaningful data from an article already expressed with scientific exactness in a tongue not natural to the reader.

To require minority linguistic groups to publish in languages other than their own would be to handicap whole nations of scientists to the point of reducing productiveness. If Polish journals are to be required to publish English and German summaries, why should not all English-using journals be likewise required to publish summaries in two other languages for the benefit of the scientific public who do not easily read English?

Is not the very implied assumption that English-using journals be exempt from the need to translate

a true unconscious chauvinism in English-speaking peoples? It is just this air of superiority that has brought Americans much criticism and dislike abroad.

In our time it is imperative that everyone avoid international antagonism wherever honorably possible. Ought not scientists, who profess at least a professional "world citizenship," be leaders in this respect?

The core of the difficulty, then, is not the fact that a minority linguistic group is using a minority language in publishing material of international importance, but rather that all countries, of whatever linguistic persuasion, are publishing in so many varied languages that it has become a real burden to scientists merely to keep informed of scientific happenings recorded through so many linguistic media.

At present most scientists aspiring to advanced degrees are required to demonstrate some facility in reading two foreign languages. These languages, of course, help to a greater or less degree in opening the doors to a wider view of scientific writings, but the device is woefully inadequate. If it were possible to set up a single language as a standard medium of scientific expression for summaries of articles of international importance, that would, I think, be a step in the right direction. In such an event, every scientist could concentrate on learning the common language, and all writings of international interest could be summarized in the common language.

The chief difficulty in such an undertaking as deciding on a common language would, of course, be the natural tendency of each country to feel that her language is most eminently fitted to be the common language for international scientific expression. Minority groups especially might be expected to resent the imposition of a majority-group language upon them. One feasible solution, and the best I can think of, would be the use of a well-worked-out, accurate, nonnational language such as Esperanto.

Esperanto, with its serious consideration by the United Nations at the present time, is coming of age. It has, in the past two generations, grown from a somewhat inept, imperfect, and little-used language into a very adaptable language, capable of exact expression and used by many diverse peoples over the world. It is much simpler to learn, being much less complex than any national language. Would it not be at least worthy of consideration as a workable solution to a confusing situation?

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DR. LINCICOME takes exception to the word "chauvinism," which he considers particularly objectionable. Well, perhaps it is, since it tends to have emotional connotations for some people. I contend, however, that it is reasonable to ascribe, or at least to suspect, the influence of chauvinism in the decision to publish the *Acta Polonica Physiologica* without any consideration for the vast majority of physiologists, who cannot understand a word of it and yet who have, I am sure, the most friendly interest in the work and welfare of our colleagues in Poland.

The end of the late World War brought with it a sudden disappearance of non-Russian abstracts in the Russian scientific literature, and this coincided with an organized attack on everything considered to be outside the articles of the faith of Russian Communism. I find it hard to believe that the Russians changed their publication policy simply to make their scientists happier and more effective. I think it will be difficult to defend the thesis that the trend in all such matters behind the Iron Curtain is not chauvinistic and that no such tendency is probable in the small matter of the policy of the *Acta Polonica*.

Certainly there will be many who will join me in genuine regret that we shall be unable to gain any inkling as to what our Polish friends are doing or saying. And most of us will hope, as implied in my letter, that Polish physiology will prosper actively without undue concern as to what may be "idealistic" or "materialistic" in particular experiments and measurements.

I cannot agree with Dr. Lincicome that minority and majority languages can be equated, or that purely practical considerations must be rejected on the ground that everyone has the right to express himself in the language most convenient to him personally. We may, of course, pursue scientific researches for the sole reason of personal and individual curiosity or aesthetic satisfaction. If, however, we have any feeling of the community of man, we have an obligation to communicate with others and to learn what other persons of similar bent have thought or done on the problems that intrigue us. In all of this I may or may not be primarily motivated by the urge to make a better world for all mankind, but I and my fellows certainly do not wish the world ill.

English happens to be my native tongue, and I am not a linguist, but I have made efforts that enable me to read, with decreasing order of facility, German, French, Spanish, Danish, Italian, and even Dutch and Portuguese. I have not been conspicuously successful in this enterprise, partly from absolute lack of time and partly because my best guesses as to the probable importance of available articles have meant practice with the several languages in the order named above. I see no possibility of learning Polish, or Hungarian, or Bulgarian, or Albanian, which distresses me if I am thereby to miss important scientific work. But I am consoled by the thought that if each of these minority language areas keeps to its own language in both reading and writing, then the likelihood of my missing much of consequence is not too great. Would Dr. Lincicome allow us abstracts and perhaps table headings in a language that 10% of the world's scientists can read?

Dr. Lincicome proposes Esperanto, and I should most heartily welcome it *if* there is any prospect at all for its use. After all, the whole question of communication resolves itself into the communication and those who receive it. With Polish very few physiol-

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.

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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.

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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.