Dr. Chandler seems not to be concerned with the effects on the public schools of removing from them an important branch of education. If agricultural education were to be turned over to agencies outside the local public schools, it would be easy to argue for turning over other types of education until little would be left of these schools. I am not at all concerned that this is going to be done. We may as well reconcile ourselves to the idea that agricultural education is to have an increasing part in our public schools and begin to work out more satisfactory relationships between this type of agricultural education and that sponsored by the agricultural colleges.

Some of Dr. Chandler's conclusions seem to trace to the limited conception of education implied by the title of his article. If we are only to "help farmers with knowledge" we shall go about the job one way; if we are to provide education in agriculture as a part of a general education, our procedure is quite different. Certainly agricultural education is much more than getting the newest sound facts about agriculture to the farm people.

Dr. Chandler's article provides further evidence that increased contacts between agricultural scientists and educators would be desirable. Perhaps, as one result of these contacts, the educators could answer the question: Why do scientists who reason well in their own fields often become inexact and unreliable when they stray outside them?

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ANTS AS PROBABLE AGENTS IN THE SPREAD OF SHIGELLA INFECTIONS

ANTS have not been incriminated as vectors of pathogenic bacteria affecting man, though medical entomology abounds with citations of flies as carriers of many species of bacteria. Even cockroaches have been suspected, but ants have not been mentioned. No reference is found in the available literature as to their role in this respect.

Theoretically, if flies can convey pathogens mechanically from infected to non-infected material, other insects should be able to do likewise. For some reason, ants, in tropical or subtropical regions where they abound, are prone to be accepted rather as a harmless invader to be combatted solely on an esthetic basis. They are driven from sugar, candy or other foods which are then consumed with little thought of contamination.

Recently in this laboratory, in the course of experiments on native food as a culture medium for Shigella, ants were found to carry these organisms. The original observation which led to this limited series of experiments was purely accidental. Portions of the native food, rice and beans cooked together with onions and tomato sauce, were inoculated with various strains of Shigella to determine whether this food was a favorable medium for the growth of the pathogens and thus a source of the dysentery so common in Puerto Rico. Following a 24-hour incubation of the plates streaked from this food, which had been inoculated with Flexner strains of Shigella, they were read, covered and left inverted on the laboratory table until the next morning. At that time unusual growths of non-lactose fermenting colonies, later identified as Shigella, were observed in a pattern similar to miniature rabbit tracks. Examination revealed a few ants on the table, leaving the plates. These were caught and allowed to walk on sterile MacConkey and S.S. agar plates which, on incubation, produced a growth pattern similar to the original.

Since it was impossible at the time to produce a laboratory ant-hill for control purposes, it was necessary to rely on those entering from the hidden colony. Many were caught as they made their first appearance in the laboratory, about six feet from the inoculated plates. They were allowed to walk across sterile plates and then were placed in large vaseline-rimmed pans. Others leaving the infected food were caught three to five feet away and, on exposure to sterile plates, produced pure cultures of Shigella. Since the MacConkey and S.S. agar are selective media, inhibiting *B. coli* as well as some Gram-positive organisms, the plates made from the entering ants were sterile 24 hours later. From this it was concluded that ants, placed in this container, were free from Shigella or Salmonella.

Food inoculated with *Shigella flexner* V was placed in one container. The ants fed readily during a period of four hours, when the food was removed and sterile plates introduced long enough to allow ants to walk over the surfaces. These plates produced *Shigella flexner* V. Twenty-four hours after feeding on the infected material, sterile plates were again introduced. These, too, produced the typical growth of Shigella marking the footprints of the ants. The process was repeated in forty-eight hours, but on these last plates no colonies appeared. About twenty ants of this group were then macerated and inoculated on plates; others placed in nutrient broth, which again failed to produce Shigella. This work was repeated with like results.

From these simple experiments it may be deduced that ants may carry bacteria on their feet from one place to another for at least 24 hours after feeding on or traversing infected material.

The ants used in this experiment were kindly identified by M. R. Smith, of the U. S. Bureau of Entomology, as tropical fire ants, *Solenopsis geminata* (F.).

This species is very common in Puerto Rico and is found in practically every kind of environment.

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MEDICAL ORTHOEPY

THE scientist who employs an instrument seeks to master the technique of its use in an effort to gain therefrom the maximal advantage. To a physician language is an indispensable tool, but once he has begun the study of medicine he rarely strives to increase his dexterity in its use. He comes to lay all stress on meaning and heeds not pronunciational faults in speaking or careless construction in writing. The errors in speaking are the more glaring since formal training in the pronunciation of medicine's specialized vocabulary is neither given to nor required of the would-be physician. It is rarely, too, that the physician has had formal training in the art of public speaking, although, to a greater or less extent, he must practice that art throughout his life. Should the medical school demand that training, stimulants would be less necessary for the audience which would remain awake at a scientific meeting. The snoring at postprandial and late afternoon lectures would be diminuendo instead of crescendo.

Since the problem of correct pronunciation is the more pressing I shall confine myself to it. That English pronunciation is capricious and irregular is well illustrated by the story of the Frenchman, who, after a period of diligent application to the peculiarities of English pronunciation, concluded that a week in London would act as a fillip to his flagging interest were he to spend it in attending some interesting plays. Accordingly on arriving in London he betook himself to the theatrical district and stopped to read the billboard on one of the playhouses. He read: "'Strange Interlude'—Pronounced Success." His comments at that would suffer by translation.

Although the problems of orthoepy are many, they are well summarized in a quotation from the latest edition of the Merriam-Webster dictionary:

> From the nature of the case, when the essential facts are considered, correctness of pronunciation must be a flexible term. It is perhaps as accurate a definition as can be made to say that a pronunciation is correct when it is in actual use by a sufficient number of cultivated speakers. This is obviously elastic, depending both on knowledge—not always obtainable—of the number of users, and on judgment as to the cultivation of the speakers. Mere majorities, without consideration of historical linguistic background and regional distribution, are not decisive.

This problem is not simplified when every user of a technical term considers himself qualified to determine its pronunciation, even though his knowledge of linguistic background may be nil. It would be as illogical for the physician to acquire his medical knowledge from a dictionary as for a careful user of language to acquire his knowledge of pronunciation from a physician. The arbitrament of the lexicographer is certainly to be preferred to chaos. In the coining of new terms to describe new knowledge, which is certainly the right of any educated user of a vital language, it is better to leave the problem of pronunciation to the lexicographer. With his knowledge of precedent he is better qualified in deciding the "correct" pronunciation by bringing to bear whatever semblance to logicality the flexible rules of orthoepy permit.

A few illustrations will justify the need for this plea. These illustrations include only terms for which but one pronunciation is recognized by the accepted dictionaries. Most of these orthoepic errors could be avoided by a thorough grounding in Latin and Greek, but it is a moot point as to whether the smattering of classical studies still required by some schools is of any value. As a former college instructor in the classics I consider it even more debatable as to whether a more extensive capital investment of time in classical studies would pay sufficient cultural dividends to make the investment sound. The time were better spent in subjects designed to broaden the cultural outlook of a future physician during that period of his education when his time is not so completely devoted, of necessity, to pure science. A very common error in the pronunciation of medical terms is to render as diphthongs vowels which should be sounded separately. This error has obtained so long that this pronunciation has gained recognition for some words. Thus, protein, correctly a three-syllable word, has been accorded but two; so also with caffeine, rabies and others. However, for such words as oubain, sparteine, codeine, caries, facies and others correct speech demands the pronunciation of all three syllables. Syndrome, analogous to epitome, should have all vowels sounded, but it has so long been mispronounced as a two-syllable word that lexicographers remark that pronunciation in medicine. There is a large class of words which is wrongly accented. Until recently correct speech placed the accent in abdomen on the second syllable. The word has been so long abused that the most recent dictionaries give the accent on the first syllable as a second choice. Words compounded with "acetyl-" should have the secondary accent on the first syllable but they are seldom accorded that measure of respect. The accent is usually placed incorrectly on the second syllable. Sulfonamide should be accented on the penult but it is usually the antepenult which we hear accented. Cerebral and verte-