cialists in the fields to which they are assigned. Thus it is absurd to speak, as Flynn does, of "faulty . . . understanding of pathology." The graduates of these schools have learned pathology out of the same textbooks and by the same procedures as those used in medical schools. The proof of the pudding is that they are passing the same Basic Science Board examinations in pathology and the other basic sciences as those required of medical candidates.

Flynn is mistaken, also, in assuming that chiropractors serve only the unsophisticated. Their patrons run the gamut of social stratification, which extends from the humblest all the way to high church dignitaries, university professors, judges of the higher courts, members of Congress, governors of states, at least three past presidents of the United States, two past presidents of Mexico, and, in Europe, members of the royal houses of Greece, Denmark, Belgium, and Britain. In fact, in England, since the lower classes tend to rely heavily upon socialized medicine, it is largely the affluent who patronize chiropractors.

I do not share Grainger's high esteem for the quality of medical service which prevails in this country and agree with Flynn as to the need for a clearheaded study of the medical care the great mass of the American people receives. (Let any one who doubts this read the small booklet *Medicine*, an interview with the public health authority Herbert Ratner, M.D., published by the Center for the Study of Democratic Institutions as one of its *Series of Interviews on the American Character*.) Should such a study be undertaken, however, extraordinary precautions should be observed to guard against the dominantly hostile attitude of medical investigators toward heterodox healing arts. As E. Grey Dimond, of the Scripps Clinic and Research Foundation, put it [Letters, *Science* **142**, 445 (1963)]: "The clinician, because of the initiation rites of his club: after 10 or 15 or 20 years of thinking of sickness, not of health, and of responsibility for *a* patient, not a population, finds himself trained into a mold. . . . The fact that there may be a better way to care for the health and sickness of the population is occasionally suspected by the individual physician, but only occasionally."

Foreign medical literature of the last 10 years, especially in Germany, is replete with references to chiropractic—contributions to its theory, reports of clinical trials, and enthusiastic appraisals of its usefulness. American medicine, having long ago condemned chiropractic as quackery, must find this a very uncomfortable situation. The impact is reflected in the growing number of articles on manipulation now finding their way into American medical journals. A single recent volume of the *Index Medicus* contains more than 300 references to spinal manipulation.

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By definition and by proclamation, there are no courses on heterodoxy in an orthodox school. Thus, if the medic can learn all about osteopathy by not studying the subject, then surely the D.O. can be credited with learning something about medicine when he at least admits to a 4-year course on the subject. Flynn proclaims the deficiencies of schools he does not claim to have examined. Flexner himself examined medical and osteopathic schools alike, and let the chips fall where they might. His impartial report did not lead to the spawning of schools of osteopathy, as Flynn implies, but rather doomed some and strengthened others just as it did for the medical schools of the day.

When the concept of physiological prophylaxis was reborn as "osteopathy" in 1874, organized medicine was at its lowest ebb. Pain was enemy number one, signs and symptoms had lesser roles, but etiology, contagion, and mechanisms of communicability were being vigorously denied as late as the second decade of this century.

At this point in medical history an idea such as that of Andrew Taylor Still, the founder of osteopathy, that fever was to be controlled but not eliminated except by defervescence brought derision from the "regular" practioners.

The following is the essence of physiological medicine which Still rediscovered: Aggressive pathological mechanisms prefer the role of scavenger to that of predator. When any living structure is genetically, environmentally, or physiologically compromised, it becomes more susceptible to pathological aggressors. Conversely, when the living structure is relieved of its intrinsic and extrinsic burdens, it becomes less susceptible (and more hostile) to pathogens, other things being equal. (It is this variation in resistance that makes LD_{50} a necessary concept in experimental biology.)

The prime difference then was that one group of practitioners often added to the burden of the ill by "meddling" with body chemistry (subtracting blood or adding substances known to alter the functions and thus the outward manifestations of disease), while the other aimed at reducing the burden by attempting to restore or establish conditions favorable to the patient and thus unfavorable to the disease. As always, the sane and sound course was as difficult to carry out with the patient as it was to sell to the profession at large. However, all this has been made history. Today's physician thoroughly understands pathological physiology, and today's science shows signs of conquering all but iatrogenic disease. When the psychologists perfect an objective test to measure ineptness, indecision, and incompetence, we will at last have the answer to Flynn's dilemma as to which of us is capable and which is culpable.

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Scientists and Social and Political Problems

Scientists sometimes make me sick! I say this even though I am trained as a scientist and have had a scientific career. I am referring to the egotistical attitude of many scientists which makes them feel that they know best or that they have better solutions to political or social problems than those experienced in these fields. A case in point is the protest made by a number of scientists, from elite academic institutions, condemning the use of chemical agents by U.S. forces in Vietnam (News and Comment, 21 Jan., p. 309). I grant that the persons making the protest are scientists, but I do not believe that they are authorities in waging war or in resolving the situation in Vietnam. There is not anything in their training or background that makes them experts on the consequences of any act of our armed forces. What makes them believe that they have the correct view in regard to the use of chemicals of any kind in warfare? United action on the basis of being scientists adds noth-

ing to similar but individual action. Rather, united action tends to degrade scientists in the minds of those to whom we have entrusted our political and military activity and does harm to the cause and to science. I strongly believe that all persons, individually or collectively, should make such protests if they so desire, but they should not do so in ways that imply that they are beings having superior views because of their training or background. I am sure that our country is as safe in the hands of our duly elected and appointed representatives as it would be in the hands of scientists, engineers, physicians, or persons of any special discipline. If any scientist wants to participate in the administration of this country, let him get himself elected or appointed to an appropriate government office.

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As a member of AAAS I was not pleased to read the resolution on Vietnam of the AAAS Council (7 Jan., p. 55). I believe the Council has misused the prestige of scientists to promote a point of view on a matter unrelated to the interests, responsibilities, and competence of scientists as a special group. Bakers, plumbers, ballet dancers, dentists, and scientists, as citizens, are all entitled to an opinion on the conduct of the war in Vietnam, but despite the Council's embarrassing effort to make it seem otherwise I fail to see why there is a scientist's position any more than a dentist's position or a plumber's position. . . .

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Preservation of Privacy in Testing

In line with Wolfle's editorial, "Psychological testing and the invasion of privacy" (31 Dec. 1965), I would like to suggest that a solution to the dilemma might be possible through "on-line testing" by a computer. Two approaches are possible now.

1) The test questions could be stored in a computer and presented to the subject privately, one question at a time, via a typewriter printer or a visual display. The subject would key in his response and be presented with the next question. After the subject has answered all questions, the computer would be programmed to score the tests, present the results in proper form, and erase the subject's responses to the individual questions from its storage unit.

2) Another approach would be to use an answer sheet for the subject's responses. The subject himself would insert the sheet into an optical scanner for direct input to a computer or scoring machine programmed to score the test. The summary scores (not the individual responses) would then be supplied in the appropriate format for interpretation, and the subject would destroy his answer sheet.

In both of these approaches the responses of the subject would be known only to the subject. This, I believe, would minimize one of the main objections to psychological tests and would probably lead to more accurate responses by the subject.

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Metric System: Congressional Study

Joseph Mayer ("Where does the metric system prevail?"—Letters, 22 Oct.), disputing a claim that 90 percent of the world's population operates under the metric system, tallies the dominant systems country by country. But it is beside the point to estimate the prevalence of the metric system in terms of geography. On the one hand, metric countries must use English measures in order to do business with us. On the other hand, even in the U.S. certain industries use metric measures as much as they can, and the metric system is used by all scientists, by the medical profession, and by many agencies of government. The metric system is used worldwide. It prevails wherever the need for scientific communication prevails. As shown by England's recent commitment to metric, it has finally won out in the area of economic interdependence. India, contrary to what Mayer implies, has almost completed her conversion and will benefit greatly as an infant industrial nation by going to the recognized international system; the change will enable India to eliminate her many regional weights and measures and with them the English system.