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## Continuing Education

One consequence of the large-scale activity in research is the obsolescence, at least to some degree, of all scientists, engineers, and physicians. The problem is not new, but the rate of obsolescence has increased, while the traditional means of meeting it have become less effective. Earlier, the dedicated individual could keep his knowledge current by devoting a reasonable fraction of his time to books, journals, and meetings. Today, there are so many meetings and so many publications that such an individual can attend to only a small part of what may be relevant to his interests. We cannot be sure that we are producing knowledge at a highly accelerated rate, but we can be certain that the number of pages devoted to presenting it has increased drastically. Commercial publishers find that technical books on almost any subject sell well enough to justify publication. The publish-or-perish doctrine has had its inevitable consequence. New journals proliferate while old ones get thicker. There is increasingly wide distribution of unevaluated material. The bottleneck in utilization of knowledge is not a shortage of publications or inadequate information retrieval. The lag occurs in the step between the pile of books on a man's desk and the transfer of that information to his mind. We need to devote much more energy to determining what is significant and then conveying it in concentrated form.

One method of instilling the essence of new knowledge is through short, intensive refresher courses. In this area the continuing education program of the American Medical Association is outstanding. About 1500 courses are offered annually by some 400 sponsoring organizations, and about 100,000 physician-students are enrolled. Most of these courses last from one day to several days. Some last longer.

Scientists and engineers have been less vigorous in meeting the challenge of obsolescence. A promising exception is a new activity sponsored by the American Chemical Society. The program was initiated at the society's national meeting in Detroit in April 1965. Two-day sessions on mass spectrometry and photochemistry were held ahead of the meeting. A 3-day course on radiochemistry was given at the conclusion of the meeting. The courses were developed for the graduate chemist who completed formal training some years ago and has recently found that entirely new disciplines have become important to his research work. The courses met with an enthusiastic response, as measured by enrollment and by answers to questionnaires circulated afterward. As a result, five courses were given in conjunction with the national meeting held in Atlantic City in September 1965. A further ACS educational program is now in progress. Two traveling short courses will be offered, in a total of nine cities. These are encouraging beginnings which should stimulate similar activity on the part of other societies.

The problem of continuing education is bigger than that of maintaining competence in a professional specialty. Men must also prepare for broader responsibilities. Some must develop new specialties to replace those no longer in demand. These activities require more resources than the average individual commands. Professional societies can be helpful, but universities, business, and government organizations must share the load.—PHILIP H. ABELSON

# Science

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Philip H. Abelson

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