foundations such as the Air Pollution Foundation and the National Sanitation Foundation later developed programs pointed toward air- and stream-pollution evaluation and control.

C. EDUCATIONAL INSTITUTIONS

Those colleges that had given any organized instruction in industrial hygiene prior to 1940 now provided short courses for greatly expanded classes in an effort to give a large number of interested persons sufficient knowledge to make them useful workers in the field during war-expanded production. During and following this period many medical schools set up short courses in industrial medicine and hygiene as orientation and refresher courses. A few institutions of advanced learning have provided special instruction in health and safety. The present plans include advanced training and education leading to degrees in health and safety engineering, and the opportunities for advanced instruction for chemists, physicists, mechanical engineers, and others who wish to prepare themselves for industrial hygiene engineering are improving.

A report[4] of the Committee on Professional Education of the American Public Health Association lists Columbia, Harvard, Johns Hopkins, Toronto, Yale, and the state universities of California, Michigan, Minnesota, and North Carolina among the institutions accredited to give the degree of master of public health for the academic year 1946–47. This report recognizes the basic sciences underlying public health practices, including industrial hygiene. Therefore, all graduates of these schools presumably will have received at least a good orientation course in industrial hygiene; some may have an opportunity to prepare for later specialization in it. A proposed report on educational qualifications of industrial hygiene personnel was published at the request of the above-named American Public Health Association Committee.[5] As the reservoir of competent, experienced industrial hygienists grows, we hope for a greater number of qualified teachers of the subject in order that more students may be encouraged to specialize in the field and thus fill the growing needs of industry and official health and accident control agencies for such specialists.

There has been concurrently a movement to provide advanced courses in technical safety and hygiene for graduates of the arts and sciences independently of any medical or public health schools. The ultimate result of such instruction, if extensive, would be expected to be a merger of safety and industrial hygiene into something yet to be named. That there is opportunity for such academic instruction is apparent but there have been much hesitation, uncertainty, and bickering about its initiation. This has been due in the past to a dearth of suitable text material and qualified faculty, as well as a division of opinion regarding the scope of the field and the aims to be fulfilled.

[4] Committee on Professional Education, *Am. J. Pub. Health*, **36**, 244 (1946).
[5] Committee on Professional Education, *Am. J. Pub. Health*, **44**, 1197 (1954).

D. RESEARCH ORGANIZATIONS

Much research into the toxicity of materials and into methods of analysis and control of harmful exposures was conducted during World War II by the United States Public Health Service, and some by industry. Several industries, seeing the need for such research, made plans to enter the field following the return to peacetime activities. The need for research into the cause and effects of many uncharted forms of air pollution is great. Such work can never expect to keep pace with industrial development, the manufacturing chemist, and the even faster moving physicist, but can follow more closely than has been done in the past. Moreover, the individual homeowner needs to be made more aware of his contribution to a rapidly growing air-borne waste disposal problem.

III. Industrial Hygiene in Foreign Countries

The best insight into what European countries are doing in industrial hygiene is given in material regarding toxic limits and industrial health in wartime published by the International Labour Office. According to reports, the rules and regulations in these countries concerning the use of poisonous materials in industry are based on the results of periodic medical examinations of the workers in plants handling such substances. At certain intervals prescribed by regulations the worker must be examined by a physician. It is the task of the physician to *make an early diagnosis to recognize and evaluate the first signs of absorption of a poison* and if necessary to remove men from work temporarily. The ILO believes that this is a reliable method for the timely detection of endangered workers and also of the hazards in a specific plant. The shortcomings of such a plan of approach obviously are in evaluating the first sign of absorption—a trick physicians in the United States have not been able to turn to their complete satisfaction. The toxic materials that give rise to recognizable, specific, dependable clinical signs in advance of serious injury are disappointingly few.

The ILO report points to the lack of compulsion in the United States regarding periodic medical examinations. There is little room to doubt that regular and more frequent medical examinations are a desirable way of discovering dangerous exposures, especially in the absence of competent industrial hygiene engineering evaluation and control. When the two methods are properly co-ordinated, however, the most dependable safeguard against harmful exposures is provided.

A. ENGLAND

In England the medical phases of industrial health have received more attention than the more technical and engineering phases of evaluation and control. Some support for this opinion is seen in the report of foundry experience.[6] Only 150 sandblasters were engaged in steel foundries prior to the war, yet 31 sandblasters were given certificates covering death, total disablement, or suspension

[6] Dust in steel foundries, *Engineering (London)*, **158**, 152 (1944).