stage. When Louis XIV was urged by Madame de Maintenon and the clericals to put his signature to the revocation of the Edict of Nantes he stubbornly refused at first, and only gave in at the last extremity when he was driven mad by a carious molar. Perhaps Sir Squire Sprigge might add to the gaiety of the profession by writing another of his fascinating books, describing the influence of medicine upon politics. In conclusion, he hoped that the profession would by degrees develop a corporate sense of common ideals and common duties and responsibilities. He himself was always accused by his best friends of having ideals; but ideals were very good things to have lying about. Perhaps nobody ever attained his ideal; certainly the best of them never did, because they set their ideals so high. Ideals were not for attainment, but for pursuit.

The Right Hon. ROBERT MUNRO, Secretary for Scotland, who in the absence of Sir Alfred Mond responded to the toast of the Ministry of Health, said that the Ministry and the Scottish Board of Health were quite an harmonious coalition. Though they had many differences of opinion they were solved by peaceful persuasion on both sides.

Colonel NATHAN RAW, M.P., in proposing the toast of "The Federation," said that it had three objects: to discuss with all those interested in health questions the formation of a public opinion upon which action might be taken; to protect the community against ill-advised legislation; and to secure adequate representation in Parliament of those interested in health problems. The Federation now embodied three separate councils: a medical council, a council of the allied professions, and a citizens' council, the last named being presided over by Lord Islington, whose name he coupled with the toast.

LORD ISLINGTON said that the Federation now included thirty-four societies, whose total membership ran to 100,000 individuals. The citizens' council was the latest development, and represented the lay organizations. Health was a technical matter, in respect to which the community was largely unorganized, ill informed, and even misinformed. It was an imperative necessity to educate public opinion, and he hoped that the Federation would take full advantage of the medium of the press.

SIR THOMAS HORDER proposed the health of the President and Sir Malcolm Morris, congratulating the former upon his baronetcy and the latter upon his approaching golden wedding. Both said a few words in reply.

A HALF-CENTURY OF PUBLIC HEALTH IN NORTH AMERICA.

BY

JOHN C. McVAIL, M.D., LL.D.

(Concluded from page 925.)

V.

HOUSING AND VENTILATION.

A BRIEF article on housing as a factor in health progress in the past fifty years, by Mr. Lawrence Veiller, secretary to the National Housing Association, states that whereas the slum was formerly confined to cities, especially to New York, it is now to be found everywhere, even in villages and on the prairies. The first housing Act in the States was the New York Tenement House Law of 1867.

Fifty years ago it was the practice to build working-class houses with "interior rooms" without either light or air supply excepting such as might be obtained from an adjoining room. Then came a requirement for airshafts, which as it turned out made things rather worse, for they were closed at the bottom and without means of ventilation. They were rendered illegal, and ventilation of rooms into spaces or courts made compulsory. Privy vaults, with their plagues of flies, are¹³ being displaced by water-closets, garbage is being collected, and surface and slop drainage controls the breeding of mosquitos. Overcrowding of rooms is still common, and overcrowding on site has tended to increase with the growth of cities. Central water supply has displaced shallow wells and yard pumps. The health officer is making inspections instead of waiting for complaints, and a higher standard of personal and general cleanliness is being observed.

The article, however, gives no information as to the progress being made in the providing of additional houses, nor does it say whether the municipality or the State is

undertaking the task of such provision. The explanation of Mr. Veiller's silence on the matter may probably be that America is still endeavouring to rely on private enterprise and business emulation. If so, the question occurs whether builders are receiving any kind of assurance that if they do their duty alike in plans and workmanship and reasonableness of charges, neither the State nor the municipality will rise up in competition against them. America is suffering, like this country, from a remarkable shortage in dwelling-house accommodation, and an exposition of the State or Federal policy that is being adopted in meeting the situation would be of real interest at the present time.

From the statements contained in the article on ventilation by Dr. George T. Palmer, epidemiologist, Detroit Department of Health, it is clear that American conditions differ from those in this country in two essential respects: first, the range of atmospheric temperature is much greater in America, and secondly, that in this country we still rely largely on the open fire for ventilation as well as for heating.

During the last fifty years the very word "ventilation" has changed its meaning. Formerly it covered just the provision of pure air. Now it "is the adjustment of the indoor air environment to meet the requirements of comfort, health, and efficiency." Thus defined it pays much more attention to temperature than to any other factor, and next to temperature comes humidity, though on that question there seems much more difference of opinion. The old CO₂ standard is soundly trounced by Dr. Palmer, and it was no doubt unfortunate that the establishment of CO₂ as a convenient measure of impurity had the effect on the public, and even to some degree on the professional, mind of maintaining the erroneous view that a small increase in the very minute quantity—four parts in 10,000—of that gas naturally existing in the air is in itself a menace to health. When the carbonic acid boggy began to lose its terrors, the theory of organic effluvia for a time took its place. Temperature was receiving attention by 1895, when Billings, Mitchell, and Bergey wrote that—

"The discomfort produced by crowded, ill-ventilated rooms in persons not accustomed to them is not due to excess of carbonic acid, nor to bacteria, nor in most cases to dust of any kind. The two great causes of such discomfort, though not the only ones, are excessive temperatures and unpleasant odours. Such rooms as those referred to are generally overheated, the bodies of the occupants, and, at night, the usual means of illumination contributing to this result."

Concerning standards of air supply, Dr. Palmer recalls how the principle of 30 cubic feet per person per minute came to be accepted as an approach to De Chaumont's 50 feet, based on his observations that the CO₂ measure of four parts in 10,000 could not be exceeded by more than two parts without accompanying conditions indicative of detriment to health. The experimental work of Flüge, Paul, Leonard Hill, and others in establishing modern principles is noted. The principles on which ventilation practice in America is based are set out. The use of ducts for temperature adjustment, humidification, changes in heating practice, re-circulation, the newer ventilation standards, deficiencies in existing laws and codes, and present-day ventilating needs, are discussed in a fashion which incidentally demonstrates the author's practical experience of the problems. He evidently appreciates the value of cross-ventilation by means of opening windows, on which so much reliance is placed in this country, especially for hospitals, and even for schools, though the difficulty in schools is much greater owing to the small cubic space practicable per child. But, as already mentioned, the conditions in America are so different from those in this country that the same methods are not generally applicable, though fundamental principles cannot but be identical.

INDUSTRIAL HYGIENE.

In an article on industrial hygiene by Dr. George M. Kober of New York the history of the subject is carried very far back, and the abuses that arose, especially in textile industries early in the last century, are described. In 1906, Congress of the United States established a National Committee on Child Labour, which resulted in a great deal of Federal and State legislation. Massachusetts, as seems to have been usual, had taken the lead, but it was not until 1877 that inspectors were given the right to enter factories. The first step in many States was to require the provision of fire escapes, and eventually the provision of sanitary conveniences. Seats for female workers, guards for dangerous machinery, ventilation, meal hours, prohibition of employment of women

within two or four weeks after childbirth, medical attendance for lead poisoning, hospitals for miners, and a variety of other matters came to be included in many State laws, but still without uniformity of either purpose or requirement.

Workmen's compensation has been subject to similar divergencies, but since 1914 progress has been rapid, so that laws have been enacted by forty-five States and three territories. The New York State law of 1920 covers 23 diseases, and the Ohio law of 1921 15 diseases, as against 30 in the British Acts.

A bureau of statistics of labour was created in Massachusetts so long ago as 1869, and the Federal Government followed in 1885. It has issued many valuable publications. A bureau of mines was formed in 1909-10, and whereas in 1907 6.19 per 1,000 day workers were killed by accidents, in 1918 the rate was reduced to 3.94. A children's bureau was created in 1911-12, and was placed under the Department of Labour in 1913.

The U.S. Public Health Service organized a division of industrial hygiene and sanitation in 1915, with a research laboratory. The Health Service programme includes surveys of industrial health hazards and their prevention, reports on disease prevalence and sanitary conditions, medical supervision of employees, standards of industrial hygiene, sanitation of industrial communities, co-operation with health authorities, and supervision of industrial establishments owned by the Federal Government.

Courses in Industrial Medicine.—Dr. Kober states that all medical schools which have courses in hygiene and public health also have eight to ten lectures on industrial hygiene and the more dangerous occupations. There are both undergraduate and graduate courses. Harvard in 1918 was the first institution in the world to establish a course of instruction and research leading to degrees in industrial hygiene. The courses include applied physiology of industry, air analysis, industrial toxicology, vital statistics, industrial sanitation, preventive medicine and hygiene, industrial health administration, employment management, workmen's compensation and the legal aspects of industrial disease, nutrition, industrial surgery, orthopaedic surgery, and industrial medicine. These subjects also are the first year's work for the degree of doctor of public health in industrial hygiene, a second year being devoted to an investigation upon some phase of industrial health. Hospital attendance on occupational disease is also required. A school of hygiene and public health was opened at Johns Hopkins University in 1918. The University of Pennsylvania has since 1906 laid emphasis on industrial hygiene in courses for its degree of doctor of public health. Yale began courses in 1917. Occupational disease clinics were first begun at Cornell University in 1910, and are now held at various hospitals. Work goes on also in industrial surgery and the physical reconstruction of disabled workers.

Economic Loss.—This problem of loss in industry due to lowered health conditions has been made a subject of special study by Dr. E. L. Fisk. It was calculated by a U.S. commission in 1913-15 that 30 million wage-earners lost about nine days annually through sickness. A large life insurance company found that the loss was 5.8 days for males and 6.9 for females. Dr. Fisk has gone into the question of the cost of periodic medical examination of the entire population, and estimates that it would amount to 525 million dollars. If about ten millions of the persons examined required treatment at 100 dollars a case, this repair work would cost 1,000 million dollars, or, say, roughly £200,000,000. He makes estimates of the losses from several theoretically preventable groups of diseases—tuberculosis, influenza, venereal infection, and eyestrain. The economic loss from fatal and non-fatal accidents is estimated by the Department of Labour at over 31 million dollars. All these are enormous figures, and we quote them without comment, but Dr. Kober expresses his cordial agreement with Dr. Fisk on the subject of periodic medical examination—a proposal which was brought before our own Royal Commission on the Poor Laws, but was adversely criticized in its report as being calculated to produce a nation of hypochondriacs.

Dr. Kober concludes his exhaustive and informative paper by advocating the promotion of physical education at school, and advanced military training between the ages of 18 and 20.

"When we supply our children with healthful schoolrooms and teach them the value of periodic medical inspection, of pure air, sanitary homes, proper and sufficient food, physical culture,

baths, and suitable clothing, and the importance of pure, clean lives, the lessons taught will be applied in the homes and workshops of the nation, and a very important advance in the conservation of life and efficiency in the industries will be the consequence."

The reviewer heartily agrees.

PUBLIC HEALTH NURSING.

In a sketch of the history of public health nursing, Mrs. Lavinia L. Dock, secretary to the International Council of Nurses, after references to Florence Nightingale and to the organization of district nursing in England, especially by the establishment of Queen Victoria's Jubilee Institute, goes on to describe the growth of public health nursing in the United States from 1877 onwards. It was quickly perceived that "the services of nurse and physician must be as easily obtainable by the poor as by the rich, and there must be no exclusion." In the antituberculosis movement the value of the nurse as a teacher of hygiene and sanitation was early recognized. The school nursing movement started in 1902 and spread rapidly. Employers of labour had begun to engage nurses in 1895, and in 1909 an industrial life insurance company set on foot for its policy-holders a nursing scheme which has grown to vast dimensions. In 1910 a course of training for public health nursing was established at Columbia University, and "such training is now (1920-21) given in the form of post-graduate courses, of which there are 22 offered by universities in various parts of the country." At present the Rockefeller Foundation is financing an inquiry into the whole system of nursing education.

Specialism in nursing raises troublesome problems in America, as in this country, but it is recognized as, within limits, unavoidable. Controversy exists as to whether private or public control of nursing is the better; by some it is held that dual responsibility should exist, as municipal authorities are not so likely to enter on new experiments as private bodies. The rapid extension of State direction and control is, however, the most significant factor in the development of public health nursing; this is attributed largely to the influence of the war, and the American Red Cross has done much temporary financial and administrative work, which has prepared the way for the State taking full charge. The Public Health Nursing Service increased from 130 twenty years ago to 11,000 at the beginning of 1920. The national organization for public health nursing has a considerable staff, publishes a monthly magazine, and circulates much special literature. It has standing committees for public health nursing, education, organization, legislation, records, and reports. Sections have been created for tuberculosis, child hygiene, school and industrial nursing.

Certain fundamental principles of work tested by experience are now universally accepted. One is that the nurse should not work under a charitable organization, otherwise her services are limited to those below the poverty line. Another is that she should not dispense material relief, as "patients learn to look for and value such assistance rather than her own gifts of nursing, skill, and wise advice." A similar observation is sometimes made in this country with regard to gifts of milk at child clinics; the mothers come for the milk but disregard the treatment and advice. Miss Gardner is quoted as maintaining that "the work should be on as sound a financial basis as possible. All who can afford to make payment for services should do so. This usually is arranged on a sliding scale, the maximum being the cost price of the visit; and the minimum the amount possible for the poorest patients, a range usually covering from five cents to fifty or sixty." Many associations, it is stated, now offer an hourly service at full cost or more (seventy-five cents or a dollar). Another principle is that records, including various specified details, must be kept, and another that there must be no interference with religious belief; it has been found that public health work should not be carried on by a church. Co-operation is the keystone of good work, and on professional relationships with the physician Miss Gardner is quoted as saying, "The public health nurse should not diagnose, should not prescribe, should not recommend a particular doctor or a change of doctor, should not suggest a hospital to a patient without the concurrence of the doctor, and should never criticize by word or unspoken action any member of the medical profession." But regarding this Dr. Ethel C. Burnham says, "These rules appear to me too severe, and I believe that in time they may be modified, so that a nurse will not be compelled to serve under a physician who is palpably ignorant or dangerously careless."