river, and enough to take care of the sewage which will probably be added for several years to come.

Oysters in the lower reaches of the Potomac River form the basis of a large and important industry. Large numbers of men gain a livelihood from this source, and the product is shipped, chiefly through Washington and Baltimore, to many parts of the country. In order to protect the ultimate consumers of the oysters, and thereby protect the industry itself, it is essential that the sanitary quality of the shellfish be known, and when necessary improved and protected. The oyster beds extend from the mouth of the river about half way to the city of Washington. In the upper few miles they are used almost solely for the growth of spat, and the oysters developing here are used chiefly for planting the lower beds, and rarely reach marketable size. From data on pollution and purification of the river, detailed in the preceding sections, it is evident that by the time the water reaches the area of the oyster beds it has undergone its maximum purification. Although during the winter months the increased stream flow shortens the time during which purifying agencies may act, any anticipated danger of pollution of shellfish from this cause will be shown to be without foundation. It is gratifying to learn that in an examination of oysters from all the beds in the whole river and its tributaries, extending over an entire season, no dangerously polluted oysters were found in the Potomac River proper. The very few polluted samples found came from localities from which few oysters are shipped.

The government bacteriologists have pointed out that the factors concerned in the purification of streams as it occurs in Nature are many, but are reducible on analysis to two main elements — the dying off of the bacteria of pollution and the oxidation of the organic constituents. All agencies of purification require time for their action, and in flowing streams it is important to appreciate the fact that it is the distance in time between successive points of observation and not the distance in miles which is significant. Moreover, the death rates of bacteria in water and the rapidity of oxidation are influenced by the temperature.

The report of the Hygienic Laboratory concludes that notwithstanding the especially favorable natural conditions attending the present disposal by dilution of the sewage of the District of Columbia, it is inevitable that, in consequence of a continued increase in the population of the District of Columbia, the capacity of the river to dispose of sewage without nuisance or danger will eventually be overtaxed. It is desirable, therefore, that primary treatment works should be installed in the near future sufficient to clarify the sewage up to the limits to which plain sedimentation may advantageously be carried. The cost of construction and operation of these treatment works would not be such as to be prohibitive when considered in connection with the benefits to be derived. They should be so designed as to work in harmony with the favorable conditions locally afforded by Nature for sewage disposal. These works should be sufficient to maintain a reasonable constant as to the amount of organic matter dependent on the river for purification. Their construction is also desirable in recognition of the advancing standards as to hygienic cleanliness of river waters, as well as for the example in such matters which should be afforded by the national capital.

STRAY DOGS, THE PUBLIC HEALTH AND PUBLIC DUTY

The association of rabies with the presence of our canine population was one of the first experiences which brought home the possible necessity of paying some attention to the uncurbed liberty of this loved and hated domestic animal. Rabies appears as an easily preventable disease when one recalls that such a minor restraint on the dog as muzzling was sufficient to eradicate it from England. By rigid enforcement of muzzling ordinances, rabies has also been practically or completely eradicated from the Scandinavian countries.

Although the foregoing feature of danger and the possibility of relief are at length rapidly being appreciated in the United States, it is not equally understood that the dog may also be of major importance as a carrier of parasites dangerous to man and the domestic animals. A zoologist in the Bureau of Animal Industry[1] has compiled the list of important diseases and parasites which are conveyed by the dog to man and the domestic animals, and which are present in this country: rabies in man and stock; hydatid in man and stock; gid in stock (and possibly also in man); muscular cysticercosis, or so-called "measles," in sheep; muscular cysticercosis, or "measles," in reindeer; cysticercosis of the liver and mesenteries in stock; tapeworm in man, especially in children; roundworm in man; tongueworm in man and stock, and fleas and ticks which transfer from dog to man and which may in this way transmit disease and parasites. Furthermore, in the recent outbreak of foot-and-mouth disease, it was determined beyond any reasonable doubt that dogs were responsible in some instances for the spread of the disease, not only from one farm to another, but also from one state to another.

It is unnecessary to elaborate the details of the harmful results here indicated as a possible outcome of the unrestrained wanderings of "man's faithful servant." We must not let either a maudlin sentiment or an unwholesome indifference blind us to the duty of modern communities and the rights of their citizens to live amid a minimum of preventable menaces

1. Hall, M. C.: The Dog as a Carrier of Parasites and Disease, Bull. 260, U. S. Dept. Agric., Nov. 23, 1915.

to health and happiness. The family dog, properly restrained and kept where he will not even become a potential danger to the other members of society, needs no severe indictment at this time. But the case against the unrestricted, vagrant, ownerless stray dog is based, says Dr. Hall,[1] on two counts — that he is a nuisance and that he is dangerous. Speaking with the authority of expert knowledge, Hall adds that the stray dog which recognizes no owner must be eliminated. The irresponsible dog, with no owner to care for him, to look after his health as it concerns the dog and other animals and man, and to restrain him and stand sponsor for his acts and especially the damage he may do, does not fit into a scheme of civilization which is based on law and the responsibility of individuals for themselves and others. Of course, a little serious consideration of the actual hygienic value of a restriction of the dog's unwarranted liberty must suffice to convince any thoughtful person. Usually, however, no reform in established customs can make great headway without a vigorous campaign of education to justify it. Are we not ready for this? Need we hesitate to agree with the government experts that "the time seems to be at hand when the stray dog, the sheep-killing cur, the vagrant carrier of dangerous parasites and of the horrors of rabies should be exterminated? The destruction of such dogs would mean a saving of hundreds of lives and the saving and making of millions of dollars." Let us believe that this is not an age of indifference.

Current Comment

CENSUS BUREAU LIFE TABLES

The Bureau of the Census of the Department of Commerce is about to publish a set of life tables for the United States compiled by Prof. James W. Glover of the University of Michigan. These tables are unique in that they deal with the whole population of the region covered instead of being, as are the actuary tables of insurance companies, restricted to selected lives. Death rates and the expectation of life are shown, at all ages, for the population of the original death registration states, namely, the six New England states, New York, New Jersey, Indiana and Michigan. The basis of computation is the population as shown by the census of 1910 and the mortality for the years 1909, 1910 and 1911. Examination of these tables brings out, once more, the familiar fact of the greater longevity of women. It is shown that, taking all races together, the expectation of life of a female at birth is more than three and one-half years greater than that of a male. This difference persists throughout life, and in the case of native white persons, up to the age of 94. The death rate in the first year of life is more than 20 per cent. higher among native white boys than among girls. Of equal importance and interest are the figures for infantile mortality; 5 per cent. of native white boys and 4 per cent. of girls die in the first month; 12.6 of the former and 10.5 of the latter during the first year. This high rate falls for both sexes to a minimum about the twelfth year, after which it again rises gradually. The relatively lower mortality among rural residents is strikingly brought out by these tables. The expectation for white males at birth in rural localities is 7.7 years greater than in cities. At the age of 39 there is still a margin of five years in favor of the country. Thereafter the difference diminishes, but the country holds the lead until the age of 88, when the urban residents commence to have slightly the advantage. These few figures have been extracted to illustrate the nature of these remarkable tables. The bulletin in which they are published contains sixty-five pages of information of direct interest and utility to the physician, and is offered by the government to the medical profession gratuitously.[1] These tables are intended primarily to be of service as a source of information to the public. They should be particularly useful to public health officials, students of vital statistics, physicians, sociologists, actuaries, statisticians and others interested in the improvement of the public health of the nation. Their uses for legal purposes, valuation of reversions, annuities, retirement funds and old age pensions are obvious.

KIDNEY METABOLISM IN NEPHRITIS

The ultimate source of the work done in the process of secretion by glandular tissues lies in the chemical energy utilized in the cellular functions. It is not an easy task to estimate this change in a quantitative way. The energy at the disposal of the cells is derived from the oxidation of complex organic compounds to products of low chemical potential value, such as carbon dioxid and water. Oxygen is requisite for the continuance of such activities; and the measurement of oxygen consumption by a gland gives some indication of the nature and extent of its cellular reactions. The expenditure of energy required for a particular sort of activity can be determined indirectly by measuring the difference between the oxygen consumption of the resting and the active organ under investigation. Most of our knowledge in this field is due to the work of the English physiologist Barcroft and his co-workers. Their measurements consisted essentially in determining the oxygen content of the arterial blood supplied to this organ, and the oxygen content of that leaving it by the vein, together with the amount of blood passing in a given time. In a study of the gaseous metabolism of the kidney, Barcroft and Brodie[2] found that, taking all the experiments together, the output of carbon dioxid was equivalent to that of the oxygen taken in. The respiratory quotient, CO_2/O_2, is therefore practically unity, as it would be from the oxidation of carbohydrate alone. This result supports the belief that the substance oxidized in the functioning kidney is of a carbohydrate nature and that it is completely oxidized in

1. A copy may be obtained on application in writing to Mr. Samuel L. Rogers, director, Bureau of the Census, Washington, D. C.
2. Barcroft, Joseph, and Brodie, T. G.: The Gaseous Metabolism of the Kidney, Jour. Physiol., 1905, xxxiii, 52.