

ary tract. The higher the concentration of beta-hydroxybutyric acid, the more bacteriostatic the urine. Helmholtz has found that it is possible to increase the content of the urine above the necessary 0.5 per cent by feeding this drug. There are two objections to its use. The drug is difficult to procure, costs 60 cents a gram, and the dosage is two grams three times per day in capsules. Furthermore, if the patient is not in a state of ketosis, the drug is oxidized to carbon dioxide and water and the \$3.60 per day is wasted.

KETOGENIC DIET

If the ketogenic diet is used, it should be given at weekly periods alternating with mouth antiseptics. Ketosis should develop in three to five days; if not evident in from eight to ten days, further effort will probably be unsuccessful. The rule at the Mayo Clinic is not to give oral medication unless adequate acidification of the urine, pH 5.5 to pH 4.6, fails to develop with ketosis; then give ammonium chlorid or ammonium nitrate in 7½-grain enteric coated pills. Use 15 to 30 grains four times per day in conjunction with 15 grains of hexamethylenamin. In passing, I might state that there are some chocolate resin coated pills on the market labeled "enteric coated," but the Mayo Clinic finding these unsatisfactory had made, on special order, salol-coated pills and these are yellow. They can be procured in Rochester and in San Francisco. It is important to use both ammonium chlorid and ammonium nitrate pills; as some individuals, for no apparent reason, produce a greater degree of acidity with consequently a lower pH value in the urine on one pill than they do on the other. Therefore, switch the drug if a high acid reaction is not obtained. Also occasionally, the ammonium nitrate pills cause nitrite poisoning of a mild form, which greatly weakens the individual, causing diarrhea and among other things cyanosis.

HIGH VITAMIN ACID ASH DIET

At the Cleveland Clinic they use the high vitamin acid ash diet routinely on all stone cases. They consider it invaluable in their inoperable bilateral stone cases, stone formers, and orthopedic cases which are immobilized for long periods of time due to fractures. During the past two and one-half years, they have used it as an adjunct in the treatment for the prevention of postoperative calculi formation. They like to keep the pH of the urine around 5.2 to 5.4 for a period of at least six months after operation. Doctor Higgins writes me that a study of his follow-up letters shows six cases in medical professors who were chronic stone formers, but have had no stones for two years. In two instances the stones were uric acid in type, and in the remaining group a mixture of calcium phosphate and oxalate. He has records of eighteen cases of stone in the kidney which have completely disappeared under this diet, and several more that show stones decreasing in size. In only one case was there a recurrence, and that patient did not follow the instructions or return for observation.

Apparently, it is far more important to keep the urine highly acid, so as to encourage the dissolving of the stones and the destruction of the bacteria, than it is to use bacteriophage or bacteriostatic drugs. Hence, in this paper, I am not considering the value of intravenous neosalvarsan, mercurochrome, acriflavine, etc., or the oral ingestion of the various dyes such as niazo, ser-enium, etc.

IN CONCLUSION

In our youth, we implicitly believed that stones could be prevented by decreasing the calcium intake through drinking only distilled water, and restricting diet to those articles that had a low mineral content. Of course this is nonsense; but who among us has not empirically treated pyelitis and cystitis in both children and adults by "salt-ing out" the bacteria. We first gave baking soda to alkalize the urine, and then alternated with sodium acid phosphate and urotropin in ineffectual doses. We still smile when we think of our gullible forbears wearing asafetida bags about their necks to cure their colds, and carrying buckeyes in their pockets to ward off rheumatism, or even putting pans of boiling water under the bed to prevent night sweats, while we persist in the use of alkalis, as did our fathers, for a trigonitis due to an infection, when instant relief usually follows reducing the pH of the urine to 4.6. Chemistry is at last coming into its own.

490 Post Street.

THE LURE OF MEDICAL HISTORY*

THE HEALTH FOUNDATION FOR RECOVERY†

By HAVEN EMERSON, M.D.
New York City

I

AFTER listening to the reports of the science and art of public health practice presented to the American Public Health Association in these past four days at Pasadena, by health officers and students of preventive medicine from our own and neighboring nations, it is quite inevitable that I should come to you brimful of optimism and self-confidence.

Something of the courage and hopes of these devotees of science I would convey to you here, because it seems to me that in the experience and accomplishments of this, the youngest of the standard functions of civil government, there are lessons for other undertakings, both private and public; and because the record of human life in our own states and insular possessions during these past five years of economic confusion, fear,

*A Twenty-Five Years Ago column, made up of excerpts from the official journal of the California Medical Association of twenty-five years ago, is printed in each issue of CALIFORNIA AND WESTERN MEDICINE. The column is one of the regular features of the Miscellany department, and its page number will be found on the front cover.

†From the De Lamar Institute of Public Health of Columbia University, New York City.

Read on September 8, 1934, at San Francisco, before the Commonwealth Club.

and sometimes despair, has been one of unparalleled excellence and unprecedented progressive annual improvement.

GROWTH OF CIVILIZATION IS INTERMITTENT

Civilization has never been continuous or a matter of uninterrupted growth, but rather an intermittent and recurrent phenomenon. Looking back into the gradually clearing record of other continents and different races, we are convinced by the archeologists and historians that, of the eight successive periods of civilization in the past ten thousand years, the intervals of barbarism have been growing shorter and the distances between them of longer duration. But a striking experience of the present era of the occidental nations, as well as for us a most encouraging event, has been the application of natural forces to add materially to man's security and to his longevity. Since about 1500, when the latest wave of emergent civilization began in Europe, and particularly in the past hundred years, man has found his greatest triumphs in mastering the forces of nature, and to such a degree that he can at last indulge in realistic plans for a controlled society and a predetermined reproduction of his kind.

The question as to whether we are now about to revert to a new phase of barbarism, or are likely to advance further into a higher civilization, appears to depend more upon our wise and honest reading of the lessons of biology than to await the possession of more power of wealth, more land, or more property or capacity of production.

Progress occurs as the result of strife, and it is for us to choose whether this will be with nature or with man. There is a practical nobility in man's struggles with nature, his striving to understand and reconcile nature's laws with man's ambition for survival, and supreme enjoyment of his superiority of mind over other living things. This is lacking in the invasions of men by force, in recurring wars of replacement and destruction of races and governments.

A PRESENT-DAY PHILOSOPHY OF SERVICE

In general the philosophy of those serving you, taking part in the active development of civil government today as protectors of the public health, is that of pacifism, a term often bandied about with abuse and misunderstanding. As this term should be understood, it implies a devotion to that knowledge which contributes to the security of individual and collective human life, as distinct from a worship or use of force and power to compel man to be subservient to man.

The dominant preoccupation of men's minds today is no longer fear of nature, but fear of each other.

A recent bulletin of your State quoted a famous sanitarian of Canada to similar effect:

"So, very, very slowly, with many a slip and a stumble, and many a scar to show for early errors, mankind has reached the point where nature is no longer a thing to fear, no longer a thing to fight, no longer a thing to conquer, even, as a rebellious slave; but rather a bountiful mother, to be studied, under-

stood, coöperated with—blood of our blood, bone of our bone, literally as well as metaphorically—and harmful to us only when we fail to understand, or venture rashly into foolish feats."

APPLICATION OF IDEALISTIC PHILOSOPHY TO PRESENT-DAY CONDITIONS

You may well ask what idealistic philosophy has to do with you, your present dilemma of commerce, government, the professions, and the arts. Permit me to answer you by a brief description of our national population and its more recent reaction to a quinquennium of meager years.

To begin with, we are a decidedly aging, or shall we say, a maturing population. This is clearly revealed in an increasing disproportion between grandchildren and grandparents. There have never been in our history, and probably not in the records of any comparable population group so many adults in proportion to minors, or in other words, so many persons who may be taxed to provide schooling for so few children.

HOW THE PROPORTION OF ADULT AND CHILD POPULATIONS HAVE CHANGED

In the first trustworthy state census of New York in 1855, 14 per cent of the population was under five years of age. We learn from the 1930 federal enumeration that this age group constituted but eight (7.7) per cent of New Yorkers today, and in California children under five are but seven (7.1) per cent of your population. Children under fifteen years of age in California constitute but twenty-three (22.8) per cent of your population today, while the earliest census of New York State recorded this group as one-third of the State's population. Fewer are born, more survive, and those who do live, live longer. This is both the cause and effect of striking changes in the prevalence of disease, and in the proportionate distribution of the different causes of death. Illnesses characteristic of childhood, youth and early manhood, are less common and less fatal than formerly, thus constantly adding to the actual and potential years of initiative and productivity. Disabilities of the later decades are more frequent in occurrence, and bulk larger each year among the causes of death. It is highly creditable to have achieved a health status of youth and early maturity which brings about a rising mortality from heart disease among the aged. In a people who have an average life expectancy of over sixty years, those natural terminations of life which happen after sixty are sure to be more frequent among us. With every drop in the infant mortality rate, every year of downward trend in tuberculosis, diphtheria and other acute communicable diseases of childhood, there is a rise in the proportion of those illnesses which terminate human life in the latter decades. This is as it should be; for it is the years from twenty to sixty that carry the world's load. It is these men and women, formerly lost by unnecessary disease and premature death, who do the work, accumulate reserves, save so that standards of living advance, provide for their own children, and set aside enough for their own old age.

HOW INCREASE IN LIFE EXPECTANCY HAS
AFFECTED AMERICAN CIVILIZATION

It is primarily the increased amount and security of young and middle-aged adult life which preventive medicine has assured in the past fifty years that is responsible for the wealth and stability of our people today, perhaps also for some of our overproduction.

All this may be generally known to you; but what may have escaped your attention, in the midst of the pressing duties of a period of dislocation calling for unprecedented readjustments of thought as well as in finance and government, is that progress in human life saving, in life expectancy, in security for the future, has been uninterrupted since 1929, and in many respects has been at a more rapid rate than in any previous five-year period of our own national experience.

There is no better guarantee of national recovery than the excellent present state of health of the people of the United States.

There has been in the minds of many a very natural fear, widespread and persistent, that the children of today, especially those born and brought up in the past five years of general economic confusion, would presently reveal tendencies to ill health, defects of growth and nutrition, lowered resistance to infection, and an increase in death rate. Deficiency diseases have been looked for, and particularly has the shadow of impending tuberculosis been expected, in duplication of the experience in Germany in the deflation and collapse in 1923-1924.

And yet nothing of the kind has occurred among us. Although the tuberculosis death rate and the infant mortality rate in Germany almost doubled while the mark reached astronomic expressions of worthlessness in a twelve-month period, our people have had no such experience.

With each succeeding year since 1929, physicians in private and hospital practice, and health officers throughout our states have accumulated evidence that any such fear of ill health, as was bred of the German inflation, is unwarranted and groundless.

Year by year, from 1929 to date and including the experience of the last six months, all the trustworthy indices of national health have pointed to a steady and solid improvement. Among the reliable and delicate tests of change in the health status of a population are expectancy of life, general mortality, the survival of infants through their first year, the prevalence of certain preventable diseases of infection, and nutrition.

While calculations of life expectancy on a national basis have not been made for the past year, large samples of the wage-earning, or industrial population have been studied, and ample proof obtained that the average length of life, which had increased from about forty to fifty-nine years, from the time of the Civil War until 1920, has continued until at present it stands at about sixty-two years, the gains since 1929 being at no lower rate than those from 1920-1929.

Taking up again the subject of life expectancy estimated on a national basis, it may be said that the general mortality is lower today than at any time in our history, in spite of the increase in the proportion of our population of the upper decades of life which tends to raise the death rate.

INFLUENCE OF ADVERSE ENVIRONMENTS IN
PREVENTABLE DISEASES

That preventable, communicable and curable disease which is most unfavorably and most quickly affected by any change for the worse in the nutrition, housing, and working conditions, particularly of city dwellers, is tuberculosis; and this has exhibited, since 1929, with unexpected regularity, an annual reduction in death rate of approximately 6 per cent per annum, each year being compared with its immediate predecessor. This fact alone should give confidence that the four basic necessities of modern man—food, shelter, clothing, and medical care—have been so universally provided for that damage has not resulted to health because of unemployment and restricted incomes. In fact, the very suspension of many a dusty trade and hazardous industry, the reduction of hours of work, the smaller number of men and women in factories, the diminished pressure for maximum production, have all contributed to a moderation in occupational hazards which has reduced the incidence and death rates from tuberculosis at every age, in all races, in both sexes, and in every area of the nation.

I do not claim that this has been due to new discoveries of science, greater skill or industry of physicians, or to more wisdom among the people; but it can be proved satisfactorily, I believe, that the economic catastrophe which has made anxious every thinking man from presidents to peons has not been responsible for damaged lives from tuberculosis, and that the simple truths upon which its control has been built have worked in years of adversity no less consistently than during fantastic prosperity.

There has been no relaxation in precautions by which water and milk are safeguarded, and consequently each year has shown new low levels of sickness and deaths from typhoid fever.

Diphtheria in the cities of the northern and central states and malaria in the southern have continued to shrink before the attacks which specific preventive and curative resources have put in our hands.

Pellagra has been cut almost in half since 1929 in many of our southeastern states by the application of the modern science of nutrition to specific deficiencies of diet, which for so long here and in many a foreign country have baffled statesmen and economists. In former periods of economic depression, and following floods, droughts, crop failures, insect pests, etc., pellagra commonly rose as a reflection of the impoverishment of large mountain and agricultural groups throughout the South. Knowledge and resourcefulness have prevented such experience in the past five years.

And, lastly, among the tests we may apply in order to judge of unfavorable trends in the health of the nation are those concerning infancy and childhood.

LESSER BIRTH RATE OF RECENT YEARS

True, the birth rate has fallen as never before in this country, and to a point in many states to threaten the permanence or balance of the population; but this has not been due to an inability of reproductive powers, an infertility of our races, or a failure of the most fundamental function of life. Rather, do we see in the falling birth rate a reasoned, rational self-control, a determination to have no more children than can be well provided for, a planning for family existence at a level acceptable to today's standard of education, culture and health. The national birth rate has fallen because we have sharply restricted immigration since 1914, and because there has been a widespread increase in the knowledge and use of contraceptive information, so that women of all classes and races can determine the frequency and conditions of motherhood for themselves, regardless of tradition, or of religious, social or emotional taboos. This voluntary control of parenthood is a sign of sound social health, not an index of racial impotence. Fewer babies will be born where most survive. The lower the infant mortality, the fewer babies will families need to continue the family. The greater the life expectancy of those born alive and surviving the first most hazardous year of life, the fewer will be the babies born. California has one of the lowest, if not at this time the very lowest birth rate of the states of the Union, and this, from obvious reasons, chiefly connected with the high average age of its population and the large numbers of its residents past the period of reproduction.

The babies born since 1929 have not only been fewer per thousand of the population, but more of them have survived than for any equal thousands of living births in our history. These babies have been less tainted with congenital syphilis, or hampered by a low level of nutrition than has been the case before, owing to the fact that the health guidance of the expectant mother has reached a high level of efficiency for a large share of the mothers of the land. In that perhaps most difficult population aggregate in this country, the metropolitan area of New York, last year there was an infant mortality of fifty per thousand and, as you must know, the west coast cities have made records down into the thirties, creditable beyond the fondest hopes of sanitarians but a decade ago. What do these figures mean in terms of national security? Merely that the family, the home, the elementary unit upon which any stable civilization and government is necessarily based, is safer and suffers less loss of child life than ever before, and this means large assets in social and political contentment even for those still waiting a return to the universal self-support and the respect of a permanent modest earning capacity.

PRESCHOOL AND SCHOOL CHILDREN

For the runabout, the so-called preschool child and the child of school age, the story is quite similar. There is no inconsistency in the evidence that malnutrition, which has always prevailed in homes of ignorance or destitution, has not increased in the United States in these past five years. Many of the states and numerous cities have, through their health departments, the medical profession, and the various private health agencies, studied the character and prevalence of undernourishment in children from two to sixteen years of age with surprisingly uniform results. California and New York had the same experience. New Hampshire, Michigan, and the Carolinas have all found the nutritional state of childhood to have been maintained on at least as high a level since 1929 as in the previous decade. This does not mean that we cannot find in some of our unfavored rural areas, and in portions of many of our industrial cities, children whose way of life, whose parents, and whose food, handicap their growth and development. Such is certainly the case, and too frequently so; but the American child, boy or girl, before and during the school period is as tall, as heavy, as active and fit at each age as was the case prior to 1929, and in many studies the children of the unemployed or otherwise temporarily dependent were better off as to growth and nutrition than previously. Childhood has suffered least, or not at all, and this was the opinion of a group of experts representing this and eight European countries under the auspices of the League of Nations in 1932. The cities of Paris, Amsterdam, Warsaw, Cologne, Budapest, Milan, and Prague have recorded lower morbidity and mortality rates since 1929 than in the last prior five-year period.

INFANT MORTALITY AS AN INDICATOR OF NATIONAL RECOVERY

You are concerned with trade balances, with relative values of the currencies of foreign and competing countries, with international debts—in short, with economic security and the sanctity of personal notes and national bonds. Permit me to suggest that at least as good a measure of national recovery, or the foundation for it, is the infant mortality rate. If England, the United States, Holland, Switzerland, Norway, lost but one child out of twenty, while Italy and Hungary lose twice as many, and France half as many more than we do, is there not good reason for confidence in the stability of those nations which count their human assets before all others, and in so doing best protect the tokens of exchange? If the tuberculosis mortality of young men and women between twenty and forty is nearly twice as high in Norway, Switzerland, Hungary, France, Italy and Austria as in England, Holland and the United States, shall we not include in our major sources of wealth, and as savings of real magnitude, the hundreds of thousands of lives we save from this disease?

(To be continued)