Hope is held out here for the obese person who would reform. He is aware that the thin live longer and healthier lives than the fat. But does it help the chances of the once-fat to start reducing late in the day? These studies provide reassurance that there are rewards still for dietary virtue through the years of maturity.

Benefits of Reducing*

LOUIS I. DUBLIN, PH.D., F.A.P.H.A.

Second Vice-President and Statistician, Metropolitan Life Insurance Company, New York, N. Y.

IT is gratifying that the problem of overweight and ways to attack it are the subject of a whole session at a meeting of the American Public Health Association. In my many years in public health and in the insurance business, I have long been aware of the impact of overweight on the health and longevity of individuals and what this means for the health of the nation. Over the past 50 years extraordinary progress has been made in the control of disease, with the result that there has been an increase of close to 20 years in the expectation of life at birth over this period. The proportion surviving to age 45 has gone up from 62 per cent, under the mortality conditions prevailing in 1900, to 90 per cent under those of 1951. A rapid growth both in the numbers and proportion of middle-aged and older persons is one of the striking facts in our demography.

As a result, an entirely new set of health problems has come to dominate the national health picture. We are no longer greatly concerned over the acute diseases of short duration, but rather with the chronic diseases which are responsible for the bulk of the toll of disability and death today. These are the chronic diseases of the heart, arteries and kidneys, cancer, diabetes, and arthritis. Today, the cardiovascular-renal diseases alone account for over half the deaths in this country at all ages and for about two-thirds of the deaths at ages over 45. Our major task in the field of health now is the study of the causes of these chronic diseases and the intensive and practical application of current and newly acquired knowledge to their prevention and relief.

Under this head, as a highly practical means of improving the chronic disease situation, is the prevention or correction of obesity. Both clinical and insurance experience have long indicated that overweight is one of the prime factors in shortening life. This is evidenced by the rise in death rates with increasing degree of overweight. And it is precisely the diseases of the cardiovascular-renal system, together with diabetes, disorders of the liver and biliary tract, and certain other conditions, that are responsible for the excess mortality of overweights.

There are numerous other hazards to health to which the overweight is especially susceptible. In the popular mind no condition is more characteristic of overweight than gallstones and other disorders of the biliary tract. This is illustrated by the medical history of

* Presented before the Food and Nutrition Section of the American Public Health Association at the Eightieth Annual Meeting in Cleveland, Ohio, October 23, 1952.

applicants for insurance. One of our studies at the Metropolitan Life Insurance Company showed that more than half the women and about two-fifths of the men accepted for insurance with a history of the condition were appreciably overweight. This finding is confirmed also by autopsy studies which show a higher incidence of gallstones in overweights than in individuals of average weight or less. The facts with regard to cancer are not clear-cut, but at least for cancer of the endometrium the prevalence among overweight women is higher than in women of lighter weight. Hernia has been found to be more common in overweights than in underweights, and furthermore obesity adds to the risk of postoperative hernia. Gout is another example of a disease associated with overweight, with virtually all patients presenting a history of excessive indulgence in food and drink. Overweight is, furthermore, a hazard in pregnancy, and both mother and infant are affected. While maternal mortality is now low even for overweight women, the late effects of the complications of pregnancy which are most frequent among them make for future trouble. Besides, the stillbirth rate among obese women is nearly double that of women of normal weight. Obese persons are also relatively poor surgical risks, primarily because of their proneness to vascular complications which are the principal causes of sudden deaths after surgery.

Overweight is not only a factor in the early development of serious diseases of middle and later life, it is also an adverse factor if the person is otherwise impaired. Thus, it has been found to hasten the onset of complications and increase mortality in many conditions, such as hypertension, asthma, and bronchitis.

With all the knowledge we have acquired on the association of overweight with a number of important diseases, there has been a surprising dearth of information on the benefits of reducing. We have had to rely largely on clinical impressions. The reason for this anomalous situation is that the data necessary to demonstrate the benefits of weight reduction are difficult to assemble and require long-term follow-up. We have been able to produce rather convincing evidence of the kind that is needed as a by-product of a new study we made at the Metropolitan Life Insurance Company to ascertain what the current situation was with respect to the mortality among overweights. This study, based on approximately 25,000 men and 25,000 women who were charged an extra premium solely because they were overweight, covered the experience on such persons over a period of 25 years. We were, therefore, able to determine both the short- and long-range effects of overweight on mortality. Without going into details, it will suffice to say that the analysis revealed nothing startlingly new. We found that these overweights, both men and women, had a mortality 50 per cent higher than among standard insured risks. The mortality increased with degree of overweight. The death rates were particularly high for cardiovascular-renal diseases, diabetes, and diseases of the liver and gallbladder, both benign and malignant. If anything, the mortality of these overweights relative to that of lighter weight persons had become worse because pneumonia and tuberculosis which caused a higher mortality in the latter have declined radically over the years, especially within the past decade.

Out of this general experience on overweights, we made a separate study of those overweights who, on a later application for insurance, showed a reduction in weight sufficient to qualify them either for standard insurance or a lower rating than they had been given originally. Thus, we had an entirely objective test of the effects of weight

reduction on mortality of overweights.

The findings of this special study are extremely interesting. Both among men and women the death rate after weight reduction was substantially less than that recorded for all the overweight people studied. Among the men the reduction was of the order of one-fifth and among women, about one-third. To my knowledge, this is the best long-range evidence available that weight reduction pays.

From the clinical side one of the best studies on the benefits of weight reduction is that made by Dr. Fellows on nearly 300 employees at the home office of the Metropolitan Life Insurance Company, even though this study was done 20 years ago. Under the program of treatment used by Dr. Fellows, which relied in most cases on diet alone, 81 per cent lost weight. For 53 per cent, the loss exceeded 10 pounds and for 12 per cent, it exceeded 30 pounds. Among 224 patients who were available for examination a year later, 32 per cent had shown a further loss averaging about 4 pounds. Five years later, 21 per cent of 193 persons available for examination showed further loss of weight, averaging about 9 pounds, but 79 per cent had regained, the average increase being 18 pounds. In the group studied, there were 33 persons with definite physical signs of disease associated with overweight, chiefly, hypertension and heart disease. It was found that 17 had suffered no progression of their condition and were better symptomatically and clinically 5 years after weight reduction than they were before. All but 2 of these had maintained a considerably lowered weight.

Benefits of weight reduction for overweights who already show evidence of cardiovascular abnormalities or of other morbid conditions are illustrated by several studies. Adlersberg and his associates have reported the results of weight reduction in 15 overweight hypertensive patients followed 3 years or more after completion of a weight reduction course. On the whole, lowering of blood pressure levels was more pronounced among those who maintained or extended their weight reduction than among those who relapsed.

Ley has reported the general effects of weight changes over a 5-year period upon blood pressure levels in overweight persons. In judging the results it should be kept in mind that some degree of increase in blood pressure will generally be recorded over a 5-year period. Ley found that overweights who had a weight loss of 5 per cent or more showed on the average a decline in both the systolic and diastolic readings; whereas among those who gained, or whose loss was minimal, the average pressure increased. The greater the weight loss the greater the decline in the blood pressure, and the larger the weight gain the greater the increase in pressure.

Newburgh demonstrated that reducing obese middle-aged diabetics to normal weight resulted in a return to normal glucose tolerance in nearly 75 per cent. Improved tolerance was observed in 50 per cent of the remainder as well as in some patients with lesser degrees of weight reduction. Somewhat comparable are the results obtained by Osserman and Dolger after weight reduction of obese diabetics with anoretic drugs. The improvement in tolerance tended to be correlated with the amount of weight loss. Reduction or discontinuance of the use of insulin also was possible more frequently for those losing most weight. A year after treatment was discontinued, those with further loss or least gain in weight were more frequently able to continue without insulin therapy or with smaller doses than patients with greater weight gains.

It is now generally accepted that in hypertension and in arteriosclerotic heart disease reduction in weight is advisable. Even with the special diets now

in vogue, such as the low-sodium and rice diets, about which there is some disagreement as to specific effects, it appears likely that much of their virtue lies in their low-caloric content, as a result of which the patient loses weight.

Overweight may seriously handicap individuals in other and subtle ways, and in this respect no age of life is spared; men, women, and children alike are affected. It often proves a handicap in the personal life of individuals. It can be a factor in employment, either because of the self-consciousness of the job-seeking overweight, or because of the preference employers may give to applicants who are of normal weight. It is also a handicap in social relationships and may give rise to emotional problems. The fat child is ridiculed by other children. He is, therefore, likely to shun them and seek satisfaction in sedentary recreation and in eating. The chances of marriage for the obese girl are less than for her thinner rival.

I do not suggest that weight reduction is a panacea for all these difficulties of the overweight person, but it can bring him substantial benefits, physical, psychological, social, and economic. Getting rid of his excess poundage in a sensible manner and keeping it off will make him look and feel better. He is also likely to live a longer and happier life.

State Health Officers Meeting

Proceedings, 1952 Annual Meeting of the Association of State and Territorial Health Officers was recently published. It gives a full list of the association committees, the text of resolutions, and recommendations on civil defense, environmental sanitation, federal relations, hospital survey and construction, infectious diseases, maternal and child health, mental health, and special health and medical services.

Among the resolutions was one in appreciation of the late Joseph W. Mountin, M.D., another for the transfer of health activities of the Bureau of Indian Affairs to the Public Health Service, and another commending the work of the Professional Examination Service of the American Public Health Association.

Also included in the *Proceedings* is text of "Principles to be Observed in the Provision of Dental Care to the Recipients of Public Welfare," adopted at the request of the Council on Dental Health of the American Dental Association.

The outgoing president, Leroy E. Burney, M.D., was succeeded by the vice-president, Carl N. Neupert, M.D., who was in turn succeeded by the election of Harold M. Erickson, M.D. John D. Porterfield, M.D., health officer of Ohio, in Columbus, was re-elected secretary-treasurer.