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term export markets of many farmer cooperatives in the country. This action has not only contributed to already depressed farm income but has impaired the ability of the United States to recover from the foreign trade and international monetary crisis which it is now suffering.

Mr. BELLMON. Mr. President, I am today introducing a bill to protect American export markets for wheat, feed grain, and soybeans. The bill is brief, and I ask unanimous consent that the full text be printed in the RECORD.

Mr. President, I send the bill to the desk and ask unanimous consent that it be referred first to the Committee on Agriculture and Forestry and then to the Armed Services Committee for a period of not to exceed 30 days so that the military aspects of the bill can be considered.

The PRESIDING OFFICER. The Senator means after it has been reported by the Committee on Agriculture and Forestry?

Mr. BELLMON. That is correct.

The PRESIDING OFFICER. Without objection, it is so ordered.

There being no objection, the bill was ordered to be printed in the RECORD, as follows:

S. 3045

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, notwithstanding any other provision of law, at any time that the shipment of wheat, feed grains, soybeans or other farm commodities from United States ports is impeded by strike or other cause and has been so impeded for 30 or more of the preceding 120 days, the Secretary of Agriculture and the Secretary of Defense shall, through the use of military personnel and other means available to them, arrange for the shipment through military installations of such quantities of wheat, feed grains, soybeans or other farm commodities from Government or private stocks as may be necessary to supply customary markets of the United States for such commodities or to preserve such markets for American agriculture.

Mr. BELLMON. Mr. President, the passage of this bill will guarantee that any customer who comes to the United States to purchase food or feed grains can be assured that these products will be delivered on schedule. The passage of this bill will not interfere with the right of longshoremen to strike, but it will assure that innocent third parties will not unfairly be hurt by an interruption of shipping services.

Clearly, neither the longshoremen nor the shipping companies benefit when American agriculture loses markets because of a dock strike. Also, neither side benefits when citizens of other countries are forced to go hungry because the food they have purchased from this country is rotting on the docks or is piled up on the ground at inland points awaiting shipment.

The passage of this legislation will in no way interfere with the right of workmen to strike. It will have the beneficial effect of assuring the maintenance of markets for American products and in this way assure the retention of cargo handling jobs for dockworkers once the strike is over.

By Mr. MONDALE:

S. 3046. A bill to provide for accelerated research, development training,

and public education in the field of heart, lung, and blood disease. Referred to the Committee on Labor and Public Welfare.

NATIONAL HEART, LUNG, AND BLOOD ACT

Mr. MONDALE. Mr. President, it is my privilege today to introduce the proposed National Heart, Lung, and Blood Act of 1972. This bill should stimulate an intensive national effort to combat cardiovascular and pulmonary diseases and other heart and blood disorders. It will provide authority for a comprehensive research, educational, and preventive program in these disease areas through the National Heart and Lung Institute and other public and private agencies.

With the recent enactment of legislation to expand cancer research we have demonstrated our belief that high program visibility and the creation of a national goal, coupled with greater funds, will result in an acceleration of research and of clinical applications toward reducing deaths from a major killer disease. We now must take the opportunity to extend this commitment to saving lives by providing the legislation necessary to accelerate research and its applications in cardiovascular and pulmonary diseases and the other important programs of the National Heart and Lung Institute and of related organizations.

The major emphasis of the National Heart and Lung Institute—NHLI—include programs in arteriosclerosis and other cardiac, pulmonary, and blood disorders, as well as professional and public education and biomedical engineering. Each of these programs contributes to our struggle to reduce premature death and disability from diseases of the heart and lungs. All of them show promise of breakthroughs in understanding causation, prevention, diagnosis and treatment.

Cardiovascular disease is the No. 1 killer disease in the developed world, and in the United States alone it accounts for more than half of all deaths. As shown by the following figures, it is by no means confined to the elderly. In 1968, 1,081,391 men and women died of cardiovascular disease in the United States, nearly 300,000 of them under the age of 65. It strikes many people, especially men, in the prime years of their lives.

Together, cardiovascular and pulmonary diseases annually leave disabled over a million men and women under the age of 65, individuals whose capacity to work and care for their families is hereby restricted. And they confine to bed another two-thirds of a million men and women, half of whom are under 65.

Cardiovascular disease is regarded today as being in an epidemic stage in all of the highly developed nations. In the United States, for example, the mortality rate for this class of diseases, in 1900 was approximately 250 per 100,000 population. By 1960 this figure had risen to approximately 480 per 100,000. Part of this is due to the increase in average life span and the high rate of cardiovascular disease among older persons, but the very significant number of younger men afflicted indicates that age is not the only explanation.

It is significant that until about 1930 the heart disease mortality rates for men and women were about the same. Today,

the mortality rate of women of all age groups is falling—yet that of men is increasing from the age of 40 onward, primarily from cardiovascular disease and lung cancer. This excess mortality of men has significant implications for society. It increases the number of widows and fatherless children, and society is losing large numbers of its most productive people.

Strong preventive measures are needed, calling for further and definitive studies, and requiring the cooperation of public and private agencies in bringing the results to the attention of health professionals and the public. Some of the causal factors have already been found: For example, high blood cholesterol levels, lack of exercise, and cigarette smoking have all been linked to a high fatality rate in cardiovascular disease.

An interesting paper concerning the effects of cholesterol on arteriosclerotic deposits among rhesus monkeys was recently presented at the meeting of the American Heart Association in California and reported in the New York Times on November 13, 1971. This and other studies show that individual programs of increased activity, abstention from smoking, and decreased cholesterol levels would help cut the death rate from cardiovascular disease.

Epidemiological studies must be greatly expanded and strengthened so that more can be learned about the geographical, national, cultural, dietary, occupational, racial, and environmental factors which contribute to the wide variations in death rates for various cardiovascular diseases among people in America and around the world. For example, a study in Evans County, Ga., covering more than 10 years, has revealed a wealth of data with great significance for understanding and preventing coronary heart disease. This was reported in the September 17, 1971, issue of Medical World News.

Methods of treatment of these disorders must also be improved and made available to more people through more and better equipped diagnostic and treatment facilities. In particular, the regional medical program facilities must be strengthened and enlarged. Techniques of cardiovascular surgery must be further developed and applied but they must also be adequately tested and evaluated. Rehabilitation of physically and psychologically disabled individuals must be expanded and refined to enable them to return to a more normal and useful life.

However, much further research is also required. For example, little is known about the specific development of arteriosclerosis and other forms of cardiovascular disease. A recent report prepared by the NHLI task force on arteriosclerosis presents a summary of the magnitude of the problem and recommendations for programs of action to control and prevent this disease. The report proposes:

First. A major health goal of the 1970's should be prevention and control of arteriosclerosis as well as its fatal and disabling consequences. Leadership in fulfilling this national commitment should be assumed by the Federal Government.

Second. To achieve this goal, the National Heart and Lung Institute should

be directed to develop, promote and support a national, coordinated, comprehensive program for the prevention and control of arteriosclerosis.

As indicated in a summary in the *Wall Street Journal* on December 10, 1971, this report calls for "a new national program to combat heart disease." The article also cites the fact that nearly 36 million adult Americans are afflicted by cardiovascular diseases.

Other cardiac diseases in which research gives hope of substantial progress include cardiac arrhythmias, heart failure and shock, and congenital and rheumatic heart disease. The Myocardial Infarction Branch of NHLI is especially concerned with the reduction of deaths and disability from heart attacks, which kill almost 700,000 Americans each year.

High blood pressure is another major problem and affects approximately 22 million Americans. An estimated 10 to 15 million people suffer from this disease and do not know it. Current research in this area at the NHLI revolves around forms of therapy, study of the causative agents, and better methods of diagnosis. A major effort is needed to determine the value of reduced blood pressure in preventing cardiac episodes.

This bill would launch a major effort to improve the control of heart and blood vessel diseases. Work on cardiovascular diseases, including atherosclerosis and hypertension, will necessarily encompass an attack on the problem of stroke, which accounts for about 200,000 deaths per year. In this connection, the National Heart and Lung Institute will have to work jointly with the National Institute of Neurological Diseases and Stroke, following established lines of specialization: the former involved with the problem before the stroke occurs and the latter concerned principally with the neurological problems resulting.

The bill will permit the full implementation of the report of the task force on arteriosclerosis, including a variety of special clinical trials. It will also make possible an increase in the number of lipid research clinics to conduct other clinical trials; substantial increase in epidemiological studies, including multi-factor preventive trials; and efforts to gain control of hypertension either through mass screening or through regional centers.

Pulmonary diseases are also a serious cause of death and a major cause of disability in the United States and seem to be increasing in frequency. Emphysema and bronchitis are among the most common of these diseases. Studies continue on their specific causes, and on preventive and therapeutic measures related to the already demonstrated involvement of environmental factors, heredity, and infection. Lung transplantation, now under study at the National Heart and Lung Institute, may be the only solution for a number of advanced cases of pulmonary disease.

Since the assignment of lung and heart diseases to the same Institute in 1969, a start has been made in accelerating efforts to control lung disease. This bill should greatly augment those efforts to deal with an increasingly important health problem.

Various blood disorders programs are contributing to our understanding of their cause and cure. Thromboembolisms are an important area of study at present. Sickle cell anemia is also under investigation at the NHLI. This disease has received far too little attention until recently and should be the target of intensive effort as a result of legislation passed by the Senate and now pending in the House.

In the field of blood studies, there is a current crisis in the provision of an adequate supply of blood for individuals who require it for surgery and other purposes. Included in the program to deal with this crisis are studies in the improvement of transfusion methods, blood storage and preservation, and blood fractionation into its component parts for various special uses. Hepatitis, a disease which may be acquired from blood transfusions, is receiving special attention, with studies of testing methods for the presence of the virus in blood and of antigens for control of the disease. Additional research is needed on these problems, as well as on anticoagulation, hemodilution and plasma substitutes. An educational program is urgently needed to attract blood donors from the healthiest elements of the population. All of this would be authorized under the bill.

The medical devices program of NHLI seeks to tap the potential of the new field of bioengineering. It has a mandate to aid in the development of mechanical devices to assist and monitor patients with chronic heart or lung disease. There may be great promise in the development of an artificial heart and an artificial lung to take over the function of the failing organs.

This program is coordinating the activities of the academic community, medical centers, and industry to achieve reliable and efficient mechanical devices to aid pulmonary and cardiac disease patients. I believe that a wide variety of scientific, engineering and technical manpower, much of it unemployed or underemployed, can and should be put to work on these life-saving projects which require work on materials development, control systems, miniaturization and reliable power supplies.

Specialized centers of research—SCOR—are now being developed, and must be expanded, to concentrate on high-priority programs in arteriosclerosis, hypertension, thrombosis, and pulmonary diseases.

Each center will be concerned with one particular disease area to develop new knowledge in prevention, diagnosis, and treatment, and to facilitate the clinical applications of such new knowledge.

Finally, public, professional and paraprofessional information and education programs are of the utmost importance in the dissemination of the knowledge acquired through the many programs of research and development of the National Heart and Lung Institute, the American Heart Association, the National Tuberculosis and Respiratory Disease Association and other voluntary agencies. Both the general public and health personnel need to be aware of the most recent information on the pre-

vention, diagnosis, and treatment of heart and lung diseases. We can, in this way, best use the knowledge being gained about these diseases to promote and maintain the health of the American people.

Legislative action is required to assure that there will be no delay whatsoever in improving the means to fight cardiovascular, blood and pulmonary diseases and to provide the resources necessary to exploit the numerous leads and clues of premature disease processes in these systems. The proposed National Heart, Lung and Blood Act of 1972 will strengthen and expand the authorities of the National Heart and Lung Institute and the Department of Health, Education, and Welfare in order to launch a comprehensive attack on heart, lung and blood diseases, in cooperation with other Federal agencies and voluntary organizations.

All together, the bill authorizes \$2.5 billion for a 5-year program. For fiscal year 1973, it authorizes \$270 million for cardiovascular disease, \$50 million for blood diseases and blood banking, \$40 million for pulmonary disease, \$40 million for information, public education and professional training, and \$45 million for bioengineering of devices to assist, replace or monitor the heart and lungs. These 1973 authorizations, totaling \$445 million, are almost double the \$232 million appropriated by the Congress for the current year.

Mr. President, the potential exists to make dramatic progress in dealing with the number one cause of death—cardiovascular disease—as well as in pulmonary and blood diseases. Now is the time to make a national commitment to do so. It is with confidence that we are ready that I introduce the National Heart, Lung and Blood Act of 1972. I ask unanimous consent that the text of the bill and of the three articles I referred to be printed in the *RECORD*.

There being no objection, the bill and articles were ordered to be printed in the *RECORD*, as follows:

S. 3046

A bill to provide for accelerated research, development training and public education in the field of heart, lung, and blood disease
Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. That this Act shall be known as the "National Heart, Lung, and Blood Act of 1972".

STATEMENT OF FINDINGS AND PURPOSE

SEC. 2. (a) The Congress hereby finds and declares that—

(1) cardiovascular disease accounts for more than one-half of all deaths in the United States;

(2) pulmonary disease is increasing in incidence and severity and is a leading cause of disability;

(3) blood disease affects millions of Americans and a supply of wholesome blood for transfusions is essential to a healthy society;

(4) existing knowledge of preventive measures and techniques for care in cardiovascular, lung, and blood diseases is inadequately disseminated to and used by professionals and the public, thus preventing the rapid reduction in the incidence and severity of these diseases which is, or may be, possible;

(5) a great potential for improving management of these diseases is offered through the development and refinement of technological devices to assist, replace, or monitor vital organs and a substantial unused capacity exists in our engineering and scientific pools to work on such problems;

(6) there is a need to involve all appropriate elements of the Department of Health, Education, and Welfare as well as other Federal agencies and voluntary associations in order to carry out a comprehensive public health program in the field of heart, lung, and blood diseases.

(b) It is therefore the purpose of this Act to strengthen and expand the authorities of the National Heart and Lung Institute and the Department of Health, Education, and Welfare in order to permit a comprehensive attack on heart, lung, and blood diseases.

PROGRAM COORDINATION AND MANAGEMENT

SEC. 3. The Secretary of Health, Education, and Welfare (hereinafter referred to as the "Secretary") is directed to develop and implement a comprehensive program dealing with heart, lung, and blood diseases utilizing the National Heart and Lung Institute and all other appropriate elements of the Department of Health, Education, and Welfare as well as providing for cooperative efforts with other Federal agencies and voluntary associations.

ANNUAL REPORT

SEC. 4. The Secretary shall, as soon as practicable after the end of each calendar year, prepare and submit to the President for transmittal to the Congress a report on the activities of the Department during the preceding calendar year with regard to this Act.

ADMINISTRATIVE PROVISIONS

SEC. 5. The Secretary, in carrying out his functions under this Act, is authorized—

(1) to the extent that he deems such action to be necessary to the discharge of his functions under this Act, to appoint not more than 25 of the scientific, professional, and administrative personnel of the Department without regard to the provisions of title 5, United States Code, relating to appointments in the competitive service, and he may fix the compensation of such personnel without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to pay rates, at rates not in excess of the highest rate paid for GS-18 of the General Schedule under section 5332 of such title;

(2) to the extent that he deems necessary to recruit specially qualified scientific or other professional personnel on a temporary basis without regard to the provisions concerning competitive service he may establish the entrance grade therefore at not to exceed two grades above the grade otherwise established for such personnel under such provisions and appoint not more than 50 such persons for periods of time which he deems appropriate;

(3) employ experts and consultants in accordance with section 3109 of title 5, United States Code.

AUTHORIZATION OF APPROPRIATIONS

SEC. 6. (a) There are hereby authorized to be appropriated for research into the causes, prevention, diagnosis and treatment of cardiovascular disease (including clinical trials, demonstrations, and administrative expenses) \$270,000,000 for the fiscal year ending June 30, 1973, \$275,000,000 for the fiscal year ending June 30, 1974, \$285,000,000 for the fiscal year ending June 30, 1975, \$295,000,000 for the fiscal year ending June 30, 1976, and \$320,000,000 for the fiscal year ending June 30, 1977.

(b) There are hereby authorized to be appropriated for research into the causes, prevention, diagnosis and treatment of lung diseases (including clinical trials, demonstrations, and administrative expenses) \$40,-

000,000 for the fiscal year ending June 30, 1973, \$40,000,000 for the fiscal year ending June 30, 1974, \$45,000,000 for the fiscal year ending June 30, 1975, \$60,000,000 for the fiscal year ending June 30, 1976, and \$70,000,000 for the fiscal year ending June 30, 1977.

(c) There are hereby authorized to be appropriated for research into the causes, prevention, diagnosis and treatment of blood disease (including clinical trials, demonstrations, and administrative expenses) and for improvement of blood banking programs, \$50,000,000 for the fiscal year ending June 30, 1973, \$55,000,000 for the fiscal year ending June 30, 1974, \$55,000,000 for the fiscal year ending June 30, 1975, \$50,000,000 for the fiscal year ending June 30, 1976, and \$45,000,000 for the fiscal year ending June 30, 1977.

(d) There are hereby authorized to be appropriated for information, public education, and professional training (including training grants, fellowships, continuing education, and administrative expenses) \$40,000,000 for the fiscal year ending June 30, 1973, \$40,000,000 for the fiscal year ending June 30, 1974, \$45,000,000 for the fiscal year ending June 30, 1975, \$50,000,000 for the fiscal year ending June 30, 1976, and \$55,000,000 for the fiscal year ending June 30, 1977.

(e) There are hereby authorized to be appropriated for research, development, and testing (including administrative expenses) of technological devices to assist, replace, and monitor the performance of the heart and lung, \$45,000,000 for the fiscal year ending June 30, 1973, \$55,000,000 for the fiscal year ending June 30, 1974, \$60,000,000 for the fiscal year ending June 30, 1975, \$70,000,000 for the fiscal year ending June 30, 1976, and \$85,000,000 for the fiscal year ending June 30, 1977.

TRANSFER AUTHORITY

SEC. 7. Notwithstanding any limitation on appropriations for any program of activity under section 6 of this Act or any Act authorizing appropriations for such program or activity, not to exceed 15 per centum of the amount appropriated or allocated for each fiscal year from any appropriation for the purpose of allowing the Secretary to carry out any such program or activity under section 6 of this Act may be transferred and used by the Secretary for the purpose of carrying out any other such program or activity under this Act.

OTHER AUTHORITY WITH RESPECT TO HEART, LUNG, AND BLOOD DISEASES

SEC. 8. This Act shall not be construed as superseding or limiting the functions or authority of the Secretary, or of any other officer, agency, or advisory council of the United States, relating to the study of the causes, prevention, diagnosis and treatment of heart, lung, and blood diseases.

STUDY LINKS DIET TO HEART ATTACKS: TESTS ON MONKEYS SUPPORT THEORIES ON CHOLESTEROL

(By Jane E. Brody)

ANAHEIM, CALIF., Nov. 12—University of Chicago researchers have produced what is perhaps the best experimental evidence to date that the typical American diet fosters the development of severe hardening of the arteries, the main cause of heart attacks.

The study also indicated that a "prudent" modification of the American diet—with a reduction in saturated fats, cholesterol and refined sugar—could avoid the development of the artery-clogging disease known as arteriosclerosis, which accounts for more than a third of the deaths of American men between the ages of 40 and 45.

The study was done with rhesus monkeys, which are very like humans in the way their body metabolism handles various foodstuffs. When middle-aged male rhesus monkeys consumed the content of the American table diet for two years, they suffered three times as much arteriosclerotic disease in the aorta,

the body's main artery, as did monkeys eating the prudent diet.

In addition, in the animals on the average American diet, the arteriosclerotic deposits were four times more severe than those found in the monkeys who ate "sensibly," Dr. Robert Wissler reported at the annual meeting of the American Heart Association here.

Dr. Wissler said that his findings supported what studies in human populations "have already strongly suggested—that diet is extremely important to the development of arteriosclerosis."

Numerous previous studies in animals have similarly indicted the American diet as one of the causes of early deaths from heart disease. But most of these studies involved such distant relatives of man as the rabbit, rat, chicken and dog.

Other studies, on closer relatives, including the rhesus monkey, have been criticized because the suspected artery-damaging ingredients were fed to the animals in abnormal ways, such as in intravenous feedings.

In the Chicago study, the monkeys ate the way they usually do, except that in place of a stock monkey diet, they received such foods as milk, eggs, roast beef and pork, chicken, cheese, butter, sugar, potatoes, carrots, cereal, fruit, cake and juice.

The "prudent" diet contained many of the same ingredients, but less or none of the foods heavily laden with cholesterol and saturated fats. These include eggs, cheese, butter and fatty beef and pork. The prudent diet also contained less than the amount of refined sugar and one-third less calories than the monkey's average American diet.

Dr. Wissler said in an interview that the monkeys "loved" both diets and consumed them with such delight that both groups gained a fair amount of weight.

Dr. Wissler, who is chairman of the department of pathology at the University of Chicago, said that the "excess calories" in the average American diet probably accelerated the arterial effects of cholesterol and saturated fats.

He noted that monkeys who eat a stock monkey diet hardly ever get arteriosclerotic lesions.

REPORT FROM THE GEORGIA HEARTLAND—WHERE BEING WHITE AND AFFLUENT HAS ITS RISKS

That blacks are generally less prone to coronary heart disease than whites has been acknowledged for several years. Nobody knows why, although both genetic and environmental factors are thought to be involved. However, the pattern is emerging more clearly as new details become available from an epidemiologic investigation begun more than a decade ago in Evans County, Ga.

This study—the only total-community, bi-racial study in the U.S.—was conceived and subsequently nurtured by Dr. Curtis G. Hames, a general practitioner in Claxton, the Evans County seat. Starting with a census of the population, he and outside investigators undertook a prevalence survey in the years 1960 to 1962 (MWN, Nov. 8, '63). At that time nearly all persons 40 and over were examined plus half the number of those between 15 and 39 years of age—a total of 3,102 county residents; these were then divided into ten subsamples to offset any examiner variations. Now a follow-up study (1967 to 1969) has provided not only a check on the earlier work but has explored a number of new avenues, turning up some surprises among the confirmations.

A group of papers detailing these results, some of which are still being evaluated, is scheduled for publication within the next few months in the *Archives of Internal Medicine*. They will show, among other things, that if you want to escape heart attacks, it helps to be lean, black, poor, nonsmoking, and physically active. With these qualifica-

tions, one apparently can eat animal fat, have elevated serum cholesterol levels, endure high blood pressure, and demonstrate ECG abnormalities without the high risks such factors ordinarily entail.

Checking back over statistics for the years between the original survey and the follow-up, the investigators found a total of 143 new cases of ischemic heart disease, 56 of them fatal. The incidence among white men was approximately 3½ times that among black men, confirming the prevalence survey data. This contrasts with figures for the country as a whole, which show more equality—3.8% against 3.2%. The difference is perhaps explained by the fact that few bi-racial prevalence studies and no incidence studies that include adequate numbers of blacks have been conducted outside Evans County.

One surprise finding in the incidence study was that differences noted earlier in the heart disease rates between affluent and poor whites had disappeared in the intervening years. The 1960-1962 data, applied to a social status yardstick that takes into account most modern symbols of affluence, showed a coronary heart disease rate of 99 per thousand for the more affluent portion of the white population, compared with just 40 per thousand for the less affluent. In the 1967-1969 incidence survey, though, this gap had narrowed to 84/1000 against 81/1000.

Another striking finding in the new study confirms a relationship noted in the earlier survey between coronary heart disease and physical activity—but with a twist. Not only do the highest rates of coronary heart disease occur, as might be expected, in the most sedentary segments of the population, but in the lowest-incidence group—sharecroppers and farm laborers—whites turn out to be no more coronary-prone than blacks. It appears, therefore, that physical activity rather than race may be the main protection against coronary disease. But Dr. Hames warns that there is reason to believe from some other findings that exercise may be an effective shield only above some as yet undefined threshold of exertion.

Among the black-white differences that have emerged in the study:

Hematocrit levels correlate with disease risk in white males, confirming certain of the Framingham, Mass., findings. Evans County data show that a white man with a hematocrit reading of 50 or above runs 2.3 times as much risk of coronary heart disease as one with a hematocrit of 40 or less. But no such relationship was found in blacks.

ECG abnormalities are approximately twice as common in blacks as in whites. Some 45% of black men and 54% of black women in the county show at least one ECG abnormality, compared with only 25% of white men and 22% of white women. But, oddly, the higher incidence of ECG anomalies in blacks carries no higher risk, at least not in males. The study shows that black men with "any of the specified abnormalities" had no greater CHD incidence than those with none. And no abnormality except left axis deviation carried any risk for black women. In contrast, four types of ECG findings correlate with higher rates of heart disease in white women, and any one of the specified abnormalities is enough to increase the risk in white men. The relationship of ECG abnormalities to coronary heart disease rates in white males is similar to what has been observed elsewhere in the country, but the pattern found in black men resembles more what has been found in Jamaica and South Africa.

Blood pressure was found to be higher in black men (154.0/96.5 average in ages 15 through 74) than in white men (140./87.7), and higher in black women (161.6/98.1) than white (143.6/87.3).

Cardiac enlargement and left ventricular hypertrophy both occur with greatest frequency in black females, with black males

coming second in CE but white females second in LVH.

Cholesterol levels tend to be lower, on average, among blacks than whites, despite a higher consumption of animal fats by blacks. But in those blacks who do have serum cholesterol levels in the high range, the risk of CHD is less than in whites.

Beta lipoprotein are higher in white men than in black.

Triglycerides are consistently higher in whites, but gamma globulins are consistently higher in blacks in each class of immunoglobulin; this difference is significant at the 5% level in the gamma-G fraction only.

The Evans County studies have approached the relationship between smoking and coronary heart disease in several different ways. When studying the incidence of CHD among occupational groups, the investigators made one analysis showing that farmers who were smokers at the time of the survey, or had been smokers, had an age-adjusted CHD rate of 93.7 per thousand, compared with 59.6 for nonsmoking farmers, 158.2 for smoking nonfarmers, and 98.3 for nonsmoking nonfarmers. A racial comparison based on the whole of the country's adult population indicated that white nonsmokers had a CHD rate of 52.7 per thousand, black nonsmokers just 9.8, white smokers 101, and black smokers only 32.5. In other words, a black smoker seems to run a considerably smaller risk of coronary heart disease than does a white nonsmoker.

Still another study, based on questionnaires sent to a sampling of white men in the relatively affluent and therefore relatively high-risk category, turned up the following CHD incidence per thousand:

Never smoked.....	70
Had smoked but stopped.....	43
Smoke fewer than 10/day.....	105
Smoke 10 to 20 per day.....	138
Smoke more than 20 per day.....	160

"The interesting thing about this," notes Dr. Hames, "is that the ones who had smoked but gave it up actually had lower rates of coronary heart disease than those who had never smoked at all. We discussed this in a bull session up at the University of Vermont, and the consensus was that people who had the guts to quit probably had a little bit extra going for them."

"We saw the same thing," comments Dr. William Kannel, director of the Framingham heart project. "There wasn't a significant difference statistically, but the risk among former smokers was lower than among nonsmokers. Why? Perhaps long-time smokers who quit have passed the test; those with compromised cardiovascular systems have already fallen by the wayside. Perhaps, too, the ex-smokers are very health-conscious. But remember that health can affect smoking habits. Prospective studies might show that those who gave up smoking because a doctor told them to are still at risk and may be worse off than before."

The Evans County studies may have also resolved a question millions of smokers ask themselves every year. If I give up smoking but then put on weight, won't my risk of heart disease be just as great? The answer appears to be no. A study of white men to determine the combined effects of smoking and body weight in the seven years since the 1960-1962 survey showed that those who smoked subsequently developed coronary heart disease at the rate of 150 per thousand if they were heavy and 80 per thousand if they were lean. Heavy nonsmokers had a rate of only 64, and lean nonsmokers 51.

During the 87 months between the prevalence survey and the follow-up examination, cerebrovascular disease developed in 94 persons in Evans County, 53 of whom were still alive. The incidence of stroke among white men (4.7 per thousand per year) was almost four times that found in white women and more than twice that reported for white men in other parts of the country. The rates in

black men and women were approximately equal (5.8/thousand/year), but there were too few patients of either sex to ensure statistical validity. Hypertension seemed to increase stroke risk in all groups, but not cholesterol levels.

In studying the relationship of weight to cerebrovascular disease—a somewhat controversial subject because of conflicting reports from other sources—the Evans County investigators focused on weight gain after age 30 on the theory that this might be the biologically important process in the development of this disease. They found, in effect, that both weight at age 20 and degree of subsequent weight gain exert an independent effect on the incidence of stroke in the white male population studied. Men who were comparatively lean at age 20 (less than 150 pounds) and gained less than 30 pounds in subsequent years had a stroke rate of 38 per thousand; the rate for heavy men who gained less than 30 pounds was 52. Lean men who gained more than 30 pounds had a rate of 59, heavies who gained as much, 90.

No correlation was found between weight at age 30 and subsequent weight gain, on the one hand, and ischemic heart disease.

Many of the research projects carried out with the Evans County epidemiologic data have been only peripherally related or totally unrelated to cardiovascular disease. For example, a search through the more than 20,000 blood samples collected in the county turned up one patient with Au antigens and severe hepatitis, and played a role in documenting an association between the two. And there have been ecological investigations and studies of viral-antibody prevalence. In one of the latter, blood samples are being used in an effort to link herpes virus Type II to cervical cancer.

But the primary business of the study is still cardiovascular disease, and the investigators have recently been concentrating on some heretofore insufficiently explored fields that Dr. Hames hopes will lead to a better understanding of ischemic heart disease. Interlocking studies of exercise, stress, catecholamines, and platelet aggregation are being run.

Part of the "fight-or-flight" mechanism developed in man during the process of evolution is the release of epinephrine and norepinephrine under stress—a catecholamine release accompanied by an increase in platelet stickiness, a precursor to thrombus formation. This, of course, must have been nature's way of helping prehistoric man to survive, lessening his risk of bleeding to death in combat.

Tests done in Evans County with 24-hour urine samples from a sizable segment of the population have shown that the more-affluent, coronary-prone group passes about 50% more norepinephrine than do poorer, lower-risk individuals. The theory now is that the affluent, "high-achiever" types not only lead a more stressful life but react differently to stress than do low achievers.

Recognizing that degrees of psychological stress vary widely among individuals, Dr. Hames and his collaborators have used physical stress—treadmill exercise to just below maximum cardiac output—in studying catecholamine release. Here they found that affluent whites pour out about twice as much norepinephrine as do poor blacks.

These results have led logically to studies of blood coagulation. Using the Born-O'Brien optical density method, which measures light transmitted through platelet-rich plasma, the Evans County investigators have charted the clumping of platelets in the blood of stressed individuals. Dr. Hames will be reporting on these studies later this year, but one preliminary conclusion he draws from the work is that chronic exercise appears to decrease the platelet-aggregation response to stress and is thereby protective. The sedentary person, on the other hand,

responds to a surge of unaccustomed activity with acute release of catecholamines and excessive platelet aggregation.

Also under investigation is the prevalence of the five known lipid transport systems, and the degree of morbidity and mortality associated with each. The various lipoprotein fractions are being separated out from the Evans County blood samples at Center for Disease Control laboratories in Atlanta.

Other aliquots of blood are sent regularly to Oslo, Norway, and Florence, Italy, where they are subjected to genetic marker tests that may, hopefully, isolate one or more factors involved in the genetic determination of the various lipoprotein fractions. "If we can learn more about the genetics of lipidemias," says Dr. Hames, "some time in the future, when we get to the point where we can manipulate genes, it may be possible to intervene to modify, say a genetic tendency to hypercholesteremia."

The word "intervention" is heard with increasing frequency in conversations among Evans County researchers. They have now embarked on preventive intervention studies of hypertension. With more than 1,000 cases of hypertension identified in the community, Dr. Hames believes these studies can develop data and refine methods that could serve as models for work in other parts of the country. Furthermore, the introduction of this kind of preventive medicine in Evans County adds a new wrinkle to the health care available to many of his patients. Dr. Hames, for all this research, still considers that care to be his main responsibility.

[From the Wall Street Journal, Dec. 10, 1971]
PROGRAM TO COMBAT HEART DISEASE URGED
BY PANEL, CITING ARTERIOSCLEROSIS EPIDEMIC

WASHINGTON.—A National Institutes of Health advisory committee, warning that death and disease from arteriosclerosis "have reached epidemic proportions in the U.S.," called for a new national program to combat heart disease.

The committee, composed of non-government experts, urged that the President appoint a commission to plan such a program and that a major expansion in spending be undertaken by NIH's National Heart and Lung Institute for research, education and prevention.

The group, chaired by Dr. Elliot V. Newman of Vanderbilt University, estimated the first-year costs of such an undertaking at \$120 million and second-year outlays at \$175 million. The National Heart and Lung Institute's budget for the current year is \$232 million and total NIH spending for medical research is currently \$1.4 billion.

Arteriosclerosis is the thickening or "hardening" of the blood-vessel walls sometimes caused by deposits of cholesterol and other fatty substances. The condition leads to a variety of circulatory problems, producing heart attacks, strokes and other types of vascular, or blood vessel disease.

The advisory group said an estimated 845,000 Americans are hospitalized each year for heart disease, 370,000 for strokes, 288,000 for hypertension, or high blood pressure, and 104,000 for other problems produced by arteriosclerosis. The group maintained that nearly 36 million American adults are afflicted by cardiovascular diseases that produce more than one million deaths each year. Cardiovascular disease is by far the leading medical cause of death in the U.S.

AT LEAST AN INITIAL STEP

The National Heart and Lung Institute, which called for the study by the advisory group, is eager to proceed with certain recommendations as at least an initial step. Dr. Theodore Cooper, institute director, estimates that running a series of four clinical trials designed to obtain essential answers to proper prevention and treatment of heart

disease would cost from \$112 million to \$125 million over a seven-to-10-year period.

The institute has benefited from major increases in its budget in previous years and is obviously seeking another increase in the coming fiscal year to cover the costs of some of these activities. The Nixon administration's new cancer program, on its way to being enacted by Congress, has produced an increased and fierce competition for research funds among the components of the National Institutes of Health. The National Heart and Lung Institute and heart researchers outside the government have been fearful that the emphasis on cancer will detract from the needs they foresee in the fight against heart disease.

The report on arteriosclerosis, they believe, is likely to serve as a significant document in future struggles within the administration and on Capitol Hill for allocation of medical research funds.

EFFECT OF REDUCING "RISK" FACTORS

The four clinical trials Dr. Cooper hopes to undertake would attempt to determine the effect of reducing three major "risk" factors believed to play the predominant role in producing heart disease. These factors are elevated levels of cholesterol and other fatty substances in blood serum, hypertension and cigarette smoking.

The trials would include:

A small test involving about 250 people at the National Institutes of Health's Clinical Center to determine the effect of lowering fat levels by diet and drugs.

A larger trial involving about 3,600 people conducted elsewhere for the same purpose.

A trial involving 10,000 to 11,000 people to determine the impact on heart disease of lowering high blood pressure and to find out why so many people appear to be reluctant to undergo drug treatment for this condition.

Another "multi-factor" risk trial involving 10,000 to 11,000 people to determine the effect of treating all three risk factors, fat levels, high blood pressure and cigarette smoking.

By Mr. CASE:

S. 3408. A bill to amend title 38 of the United States Code to authorize the Administrator of Veterans' Affairs to enter into agreements with hospitals, medical schools, or medical installations for the central administration of a program of training for interns or residents. Referred to the Committee on Veterans' Affairs.

Mr. CASE. Mr. President, today I am introducing legislation that will pave the way for the development of a medical school and veterans hospital in southern New Jersey. The legislation will authorize the Administrator of Veterans' Affairs to enter into agreements with hospitals, medical schools, or medical installations, and residency training. Appropriated funds can be used to pay a medical school for the cost of training during the time the intern or resident serves in the Veterans' Administration hospital.

Construction of a medical school and hospital is very important and I have urged the Office of Management and Budget to set aside funds for this program. However, unless the Veterans' Administration has legislative authorization to enter into formal agreements with a medical school, the program cannot get underway. At this time the Veterans' Administration does not have the authority to do this.

The bill I am introducing today has already passed the House of Representatives and requires only Senate action.

It is similar to a draft proposal submitted by the administration to the 91st Congress.

I ask unanimous consent that the text of my bill be printed at this point in the RECORD.

There being no objection, the bill was ordered to be printed in the RECORD, as follows:

S. 3048

A bill to amend title 38 of the United States Code to authorize the Administrator of Veterans' Affairs to enter into agreements with hospitals, medical schools, or medical installations for the central administration of a program of training for interns or residents

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 4114 of title 38, United States Code, is amended by deleting "(b)" at the beginning of subsection (b) and inserting in lieu thereof "(b) (1)" and by adding the following new paragraph:

"(2) In order to more efficiently carry out the provisions of paragraph (1) of this subsection, the Administrator may contract with one or more hospitals, medical schools, or medical installations having hospital facilities and participating with the Veterans' Administration in the training of interns or residents to provide for the central administration of stipend payments, provision of fringe benefits, and maintenance of records for such interns and residents by the designation of one such institution to serve as an agency for this purpose. The Administrator may pay to such designated central administration agency, without regard to any other law or regulation governing the expenditure of Government moneys either in advance or in arrears, an amount to cover the cost for the period such intern or resident serves in a Veterans' Administration hospital of (A) such stipends as fixed by the Administrator pursuant to paragraph (1) of this subsection, (B) hospitalization, medical care, and life insurance, and any other employee benefits as are agreed upon by the participating institutions for the period that such intern or resident serves in a Veterans' Administration hospital, (C) tax on employers pursuant to chapter 21 of the Internal Revenue Code of 1954, where applicable, and in addition, (D) an amount to cover a pro rata share of the cost of expense of such central administrative agency. Any amounts paid by the Administrator to such fund to cover the cost of hospitalization, medical care, or life insurance or other employee benefits shall be in lieu of any benefits of like nature to which such intern or resident may be entitled under the provisions of title 5 of the United States Code, and the acceptance of stipends and employee benefits from the designated central administrative agency shall constitute a waiver by the recipient of any claim he might have to any payment of stipends or employee benefits to which he may be entitled under this title or title 5 of the United States Code. Notwithstanding the foregoing, any period of service of any such intern or resident in a Veterans' Administration hospital shall be deemed creditable service for the purposes of section 8332 of title 5 of the United States Code. The agreement may further provide that the designated central administrative agency shall make all appropriate deductions from the stipend of each intern and resident for local, State, and Federal taxes, maintain all records pertinent thereto and make proper deposits thereof, and shall maintain all records pertinent to the leave accrued by each intern and resident of the period during which he serves in a participating hospital, including a Veterans' Administration hospital. Such leave may be pooled, and the intern or resident may be afforded leave by the hospital in which he