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Congressional Record

PROCEEDINGS AND DEBATES OF THE 92d CONGRESS, FIRST SESSION

Vol. 117 WASHINGTON, TUESDAY, MARCH 23, 1971 No. 41

Senate

By Mr. MONDALE (for himself and Mr. RANDOLPH):

S. 1336. A bill to limit the amount of the monthly premium for participation in the supplementary medical insurance program established by part B of title XVIII of the Social Security Act. Referred to the Committee on Finance.

By Mr. MONDALE:

S. 1337. A bill to amend title XVIII of the Social Security Act to provide full payment—subject to any deductibles and coinsurance generally applicable—for whole blood furnished an individual under the program of health insurance for the aged. Referred to the Committee on Finance.

MEDICARE AMENDMENTS

Mr. MONDALE. Mr. President, inflation is wrecking the lives of many older Americans. Not only are their fixed incomes hurt the most by rising prices, but they pay a disproportionate share of some of the fastest rising costs in our economy.

Nowhere is this problem more severe than in the squeeze between meager and declining incomes of senior citizens, and the escalating costs of their medical care.

To assist older Americans with these medical costs, I am introducing amendments which will relieve a portion of the most inequitable costs which they now bear.

I propose to reduce the medicare premium costs for part B coverage for professional care; second, I propose removal of the obnoxious requirement that medicare patients pay a blood deductible charge for the first 3 pints of blood they may require. Finally, Mr. President, I wish to reemphasize the need to expand medicare coverage for out-of-hospital drug costs.

Persons over age 65 constitute only about 10 percent of our population. But 20 percent of the poor people in the United States are over 65.

While inflation takes an increasing toll, the number of persons between 65 and 70 who are employed has fallen by half in the last 15 years.

While the number of all poor persons in the United States fell 36 percent between 1959 and 1968, the number of poor persons over 65 was reduced by only 16 percent.

The incomes of older Americans fall farther and farther behind inflation. Only 17 percent of retired Americans have incomes outside their pensions, and in Minnesota the monthly social security payment to retired workers averages $100.

In recent years, medical costs have risen more than 33 percent faster than the Consumer Price Index.

It was gratifying to see the broad support in the Congress for the recent 10 percent social security benefit increase. But much remains to be done to improve the economic situation for older citizens. The legislation on medicare now pending in the House gives us another opportunity to help senior citizens.

In Minnesota this year, 400,000 older citizens will be asked to pay more than $31 per year more in medicare part B premiums, for professional care, than in 1966 when the program began.

The Nixon administration has increased these premium costs to participants in medicare's supplementary medical insurance program by 33 percent in the last 2 years. The Secretary of Health, Education, and Welfare has raised those costs, originally $3 per month, to $4 in April 1968, $5.30 a month as of July 1970, with another increase anticipated in July of 1971, to around $5.60.

For the great majority of the 20 million medicare beneficiaries, this last increase is intolerable. For, while the administration plans to further increase costs in part B premiums and has increased costs by 18 percent in deductible and per diem payments, they have not sought commensurate increases in social security payments. The increase of 6 percent the administration asked for this year was really no increase, but would have just kept up with inflation. Including the 1970 social security increases, the minimum benefit for a man and his wife is $1,152 a year. This is less than one-half the $2,671 per year estimated by the U.S. Bureau of Labor Statistics as necessary to permit existence at the poverty line for a retired couple.

My amendment would roll back the monthly premium to $4 through June 1971. Effective July 1, 1971, my bill will return the monthly premium for part B to $3 a month, as it was in 1966 when the program was initiated. This additional cost of about $230 million will be paid out of the general fund.

When this program was established, it was decided that half of the cost would be borne out of general revenues of the Federal Government. The other half was to be borne by the participants. Had the cost of living remained reasonably stable, this would have been tolerable. But, in the face of recent and continuing inflationary developments, we cannot ask these poor, aged beneficiaries to pay even one-half of the increased physicians' charges that have been experienced since medicare went into effect.

Seven million people age 65 and over are living in poverty or near poverty, many of them receiving no income except social security benefits. We have succeeded in amending our tax laws so that some of those living in poverty can be freed of Federal income taxes. It makes no sense to levy an increase of $15.60 a year on a person living in poverty just because it is calculated as some kind of "share" of the medical insurance program. This has the effect of saddling those already in poverty with the cruel costs of inflation. My amendment provides a better way.

Since medicare went into effect in 1966, there have also been very substantial increases in the deductible portions of hospital and extended care charges which participants must pay. For example, the hospital deductible was initially set at $40, the payment per day after the 60th day at $10, the individual's share of the lifetime reserve days was $20, and the payment per day for extended care facility charges after the 20th day was $5. The Department of Health, Education, and Welfare increased these charges on January 1, 1970, to $52, $13, $26, and $6.50, respectively.

In short, the administration lays the full burden of inflationary medical costs upon those who have the greatest need for medical care and the least capacity to meet these added burdens.

The increasing deductibles and per day payments will constitute a nearly crushing burden on many of those beneficiaries, who receive benefits at or near the minimum, if they must be hospitalized. For those who have attempted to protect themselves against this risk by private health insurance to supplement the hospital and medical coverage under medicare, the picture is no better.

For example, premiums for the medicare supplementary insurance offered by Blue Shield in Minneapolis have recently been increased from $7.95 a month last year to $14.90 a month today. Thus, these costs have increased by 87 percent in 2 years.

With reference to the second amendment I submit today, Mr. President, one of the most insensitive provisions of medicare is the requirement that participants pay a "blood deductible" charge for the first three pints of the lifegiving fluid which they may require. I offer an amendment to abolish this absurd and inhumane regulation. It is difficult enough for older citizens to maintain dignity in their lives, struggling against inflation and rising medical costs with limited incomes. To sick older citizens without money, and often far removed from possible family blood donors, this blood deductible is a cruel insult. The cost of my amendment is only $16 million per year, only one-eighth the amount we recently approved for 1 year for an impractical space shuttle station.

Finally, Mr. President, I want to reiterate my support for providing coverage of our-of-hospital drug costs under medicare. As Senator MONTOYA has pointed out so ably and so often, this reform is long overdue.

Approximately 3.8 million persons spend more than $100 a year on prescription drugs alone. Older persons pay 20 percent of all prescription drug costs in America.

They cannot afford these expenses. We are all aware that study after study, by the administration and by the Congress, has recommended that medicare assume these costs.

I offered an amendment to this effect in the last Congress, and I urge the passage of the Montoya amendment at the first opportunity this session.

The medicare amendments of 1971 offer the 92d Congress a major opportunity to show that human concerns come first in its order of priorities, and that the pressing needs of older Americans will be met.

psychosurgery (again) is latest outrage – used for modifying kids' behavior

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PROCEEDINGS AND DEBATES OF THE 92d CONGRESS, FIRST SESSION

Vol. 117 WASHINGTON, WEDNESDAY, MARCH 24, 1971 No. 42

Senate

By Mr. MONDALE (for himself and Mr. BAYH, Mr. BROOKE, Mr. CASE, Mr. FONG, Mr. HARRIS, Mr. HART, Mr. HUGHES, Mr. HUMPREY, Mr. JAVITS, Mr. KENNEDY, Mr. McGEE, Mr. McGOVERN, Mr. MOSS, Mr. NELSON, Mr. PELL, Mr. RANDOLPH, and Mr. SCHWEIKER):

S.J. Res. 75. A joint resolution to provide for a study and evaluation of the ethical, social, and legal implications of advances in biomedical research and technology. Referred to the Committee on Labor and Public Welfare.

HEALTH SCIENCE AND SOCIETY

Mr. MONDALE. Mr. President, I introduce for myself and Senators BAYH, BROOKE, CASE, FONG, HARRIS, HART, HUGHES, HUMPHREY, JAVITS, KENNEDY, McGEE, McGOVERN, MOSS, NELSON, PELL, RANDOLPH, SCHWEIKER for appropriate reference a joint resolution to create a National Advisory Commission on Health Science and Society.

Recent advances in biology and medicine make it increasingly clear that we are rapidly acquiring greater powers to modify and perhaps control the capacities and activities of men by direct intervention into and manipulation of their bodies and minds. Certain means are already in use or at hand—for example, organ transplantation, prenatal diagnosis of genetic defects, electrical stimulation of the brain. Others await the solution of relatively minor technical problems, while still others depend upon further basic research. All of these developments raise profound and difficult questions of theory and practice, for individuals and for society.

To consider and study the ethical, social, and legal implications of advances in biomedical science and technology, I propose in this measure the creation of a 15-member commission on Health Science and Society. This commission would also report on the public policy implications of its findings in interim reports and in a final report at the end of its 2-year study.

Mr. President, 3 years ago I introduced a joint resolution which was essentially the same as the one I am introducing today. At that time, heart transplants were a startling new medical breakthrough. Since then, several hundred heart transplants have been performed. When I reintroduced the resolution in the last Congress, the first successful test-tube fertilization of a human egg had just been reported. Now, just 2 months ago, Nobel Prize winner Dr. James D. Watson told the House Committee on Science and Astronautics that we will soon see the day when a baby will be conceived in a test tube and placed in a woman who will bear the child. As you may recall, Dr. Watson's reported prediction was that when such an implantation is successfully made, "All hell will break loose."

These brief comments indicate that the need for a sober and thoughtful analysis and evaluation of biomedical advance is even more urgent now than it was 3 years ago when I first proposed this commission.

The past 3 years have seen great advances in genetics. There have been major increases in the ability to detect genetic diseases, even in fetuses still unborn. By examining fetal cells present in fluid obtained from the wombs of pregnant women, diagnosis of diseases such as Mongolism are now being made. As treatment for most genetic diseases is not now available, the diagnosis is generally followed by abortion of the affected fetus.

But major steps have been taken toward developing a technology of genetic engineering which might eventually be able to provide a cure for diseases such as hemophilia, cystic fibrosis, or diabetes. Single bacterial genes have been recently obtained in pure form, both by isolation from biological material and by chemical synthesis from simple building blocks. And just 2 weeks ago, the Washington Post reported that British scientists had artificially corrected a genetic defect in mouse cells by inserting some healthy genetic material from chick embryos.

But these welcome prospects are accompanied by others which are frankly disturbing. In other areas of genetic research, work has progressed which may soon make possible the asexual production of large numbers of identical humans, by a technique known as cloning. Work is also in progress to make possible the predetermination of the sex of unborn children.

Research into the nervous system and behavior proceeds at an accelerated pace. The use of amphetamines on school children to treat the socalled "hyperactive syndrome," recently the subject of public concern and controversy, is only a foretaste of things to come as the science of psychopharmacology becomes more sophisticated. New drugs offer possibilities both for novel therapies and for novel abuses. There has also been increasing experimentation with electrical stimulation and with selective destruction of certain areas of the human brain, in order to achieve desired behavioral changes.

In the area of clinical medicine, there has been considerable effort to resolve existing confusion concerning the definition of clinical death. This confusion is due to the fact that, thanks to medical progress, the traditional signs of life—heartbeat and respiration—can now be maintained almost entirely by machines. Since many human matters depend upon the distinction between a man alive and a man dead, the importance of resolving this dilemma cannot be overemphasized.

There is great ferment now in cancer research, and we may be nearing the day when men may live out their lives without fear of this dread disease. And while on the subject of longevity, we should not neglect the claims of some scientists that the time is now ripe for an attack on the biological processes of aging. If this attack is successful, the result could be many added years of healthy life for all.

While holding forth the promise of continued improvements in medicine's abilities to cure disease and alleviate suffering, these developments also pose profound questions and troublesome problems. There are questions about who shall benefit from and who shall pay for the use of new technologies. Shall a person be denied life simply because he does not have enough money for an organ transplant?

There will be questions about the use and abuse of power. When and under what circumstances can organs be removed for transplanting? Who should decide how long a person is to be kept alive by the use of a machine? Exactly what constitutes informed consent for a prospective transplant donor or recipient? The extent to which the consent is informed and voluntary may very well depend not only on what is said, but how it is said.

There will be questions about our duties to future generations and about the limits on what we can and can not do to the unborn. Is it ethical for a man and wife, each carrying a gene for a serious hereditary disease, to procreate, knowing that their children have a significant chance of acquiring the disease? Should the law enjoin certain marriages or require sterilization for such eugenic consideration? What rights do unborn children have to protect them in experiments involving genetic engineering or test tube fertilization? In a letter to the Washington Post, Dr. Leon Kass, executive secretary of the Committee on the Life Sciences and Social Policy of the National Research Council, warned:

> One must not forget that there is a human being (the child-to-be) upon whom these experiments are to be performed and who may suffer for our zeal and ignorance, an ignorance no more excusable because well-meaning.

We shall face questions concerning the desirable limits of the voluntary manipulations of our own bodies and minds. Some have expressed concern over the possible dehumanizing consequences of increasing the laboratory control over human procreation or of the increasing use and abuse of drugs which alter states of consciousness.

We shall face questions about the impact of biomedical technology on our social institutions. What will be the effect of genetic manipulation or laboratory-based reproduction on the human family? If laboratory fertilization can produce children for sterile couples, what will be the consequences for those orphaned or abandoned children who might otherwise have been adopted by these couples? What will be the effect on the generation gap of any further increases in longevity?

We shall face serious questions of law and legal institutions. What will the predicted new-fangled modes of reproduction do to the laws of paternity and inheritance? What would happen to the concept of legal responsibility if certain genetic diseases were shown to predispose to antisocial or criminal behavior? What would be done to those individuals with such traits?

We should expect that some people will try to have certain particularly frightening technologies banned by statute. Should this be done? Could such prohibition be effective?

Finally, we as legislators will face problems of public policy. We shall need to be informed of coming developments, of the promises they hold forth and the problems they present, and of public attitudes in these matters. We shall need to decide what avenues of research hold out the most promise for human progress. And we shall need to help devise the means for preventing undesirable consequences.

Mr. President, as serious and as vexing as these practical questions may be, there is yet another matter perhaps more profound. The biomedical technologies work directly on man's biological nature, including those aspects long regarded most distinctively human. Thus, we should expect major challenges to our traditional image of man as this technology unfolds. The impact on our ideas of free will, birth, and death, and the good life is likely to be even more staggering than any actual manipulation performed with the new technologies. These are matters of great moment, and we urgently need to take counsel from some of our best minds. I trust that the Congress will recognize this need by establishing this commission.

The questions raised require the competence of persons with different training and background. Accordingly, I propose that the commission include individuals drawn from the fields of medicine, law, theology, biological science, physical science, social science, philosophy, humanities, health administration, Government, and public affairs. The physician and the philosopher, the scientist and the theologian need to get together and to educate each other. We have much to gain from their collective learning. The commission I propose will provide the vehicle for this much needed exchange.

There is also a need for improved communication between laymen and scientists. The layman needs to learn more about the prospects and implications of expected developments. The scientist needs to acquire a broader understanding of the possible ramifications of his work and the concerns of the people it will affect. The Commission I propose will provide a vehicle for such communication.

Mr. President, we can ill afford to wait until the crush of events forces us to make hasty and often ill-considered decisions. We cannot again allow events to pass us by. We face an increasing number of new and far-reaching technological possibilities, touching the very nature of man. We face the need for some wise, deliberate, and sober decisions. These questions are not going to go away or answer themselves. They will become progressively more difficult as time goes on. As Dr. Watson said in his testimony:

If we do not think about the matter now, the possibility of our having a free choice will one day suddenly be gone.

It would be foolish to expect the Commission to provide answers to all the questions we face, but we can expect that it will provide help in making some of our difficult decisions. The findings and considered judgments of excellent minds with a wide range of experience and training will be invaluable to individuals who must struggle with the awesome responsibility of coping with these new technologies.

We make no prejudgments. We do not call for controls. We ask only for a thorough and thoughtful consideration of every aspect of these complex, difficult, and profound questions and problems. I and the Senators who join with me in sponsoring this resolution sincerely hope that Congress will act with dispatch in creating this much needed Commission.

Mr. President, I ask unanimous consent that the text of the joint resolution, together with a number of articles, letters and statements bearing on these profound problems, be printed in the RECORD.

There being no objection, the joint resolution and material were ordered to be printed in the RECORD, as follows:

S.J. RES. 75

Joint resolution to provide for a study and evaluation of the ethical, social and legal implications of advances in biomedical research and technology

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That this joint resolution may be cited as the "National Advisory Commission on Health Science and Society Resolution."

ESTABLISHMENT OF COMMISSION

SEC. 2. There is hereby established a National Advisory Commission on Health Science and Society (hereinafter referred to as the "Commission.")

MEMBERSHIP

SEC. 3. (a) The Commission shall be composed of fifteen members to be appointed by the President from among the fields of medicine, law, theology, biological science, physical science, social science, philosophy, humanities, health administration, government, and public affairs.

(b) Any vacancy in the Commission shall not affect its powers.

(c) The President shall designate one of the members to serve as Chairman and one to serve as Vice Chairman of the Commission.

(d) Eight members of the Commission shall constitute a quorum.

DUTIES OF THE COMMISSION

SEC. 4. (a) The Commission shall undertake a comprehensive investigation and study of the ethical, social, and legal implications of advances in biomedical research and technology, which shall include, without being limited to—

(1) analysis and evaluation of scientific and technological advances in the biomedical sciences, current and projected;

(2) analysis and evaluation of the implications of such advances, both for individuals and for society;

(3) analysis and evaluation, through the use of seminars and public hearings and other appropriate means, of public understanding of and attitudes toward such implications;

(4) analysis and evaluation of implications for public policy of such findings as are made with respect to the biomedical advances and public attitudes.

(b) The Commission shall make maximum feasible use of related investigations and studies conducted by public and private agents.

(c) The Commission shall transmit to the President and to the Congress one or more interim reports and, not later than two years after the first meeting of the Commission, one final report, containing detailed statements of the findings and conclusions of the Commission, together with its recommendations, including such recommendations for action by public and private bodies and individuals as it deems advisable.

POWERS OF THE COMMISSION

SEC. 5. (a) The Commission or, in the authorization of the Commission, any subcoommittee or members thereof, may, for the purpose of carrying out the provisions of this joint resolution, hold such hearings, take such testimony, and sit and act at such times and places as the Commission deems advisable. Any member authorized by the Commission may administer oaths or affirmations to witnesses appearing before the Commission or any subcommittee or members thereof.

(b) Each department, agency, and instrumentality of the executive branch of the Government, including independent agencies, is authorized and directed, to the extent permitted by law, to furnish to the Commission, upon request made by the Chairman or Vice Chairman, such information as the Commission deems necessary to carry out its functions under this joint resolution.

(c) Subject to such rules and regulations as may be adopted by the Commission, the Chairman shall have the power to—

(1) appoint and fix the compensation of an executive director, and such additional staff personnel as he deems necessary, without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rate, but at rates not in excess of the maximum rate for GS–18 of the General Schedule under section 5332 of such title, and

(2) procure temporary and intermittent services to the same extent as is authorized by section 3109 of title 5, United States Code, but at rates not to exceed $100 a day for individuals.

(d) The Commission is authorized to enter into contracts with Federal or State agencies, private firms, institutions, and individuals for the conduct of research or surveys, the preparation of reports, and other activities necessary to the discharge of its duties.

COMPENSATION OF MEMBERS

SEC. 6. Members of the Commission shall receive compensation at the rate of $175 per day for each day they are engaged in the performance of their duties as members of the Commission and shall be entitled to reimbursement for travel, subsistence, and other necessary expenses incurred by them in the performance of their duties as members of the Commission.

APPROPRIATIONS AUTHORIZED

SEC. 7. There is hereby authorized to be appropriated the sum of $1,000,000 for the fiscal year beginning July 1, 1971; and $1,000,000 for the fiscal year beginning July 1, 1972.

TERMINATION

SEC. 8. On the ninetieth day after the date of submission of its final report to the President and to the Congress, the Commission shall cease to exist.

[From the New York Times, Sept. 15, 1970]

CHIMP'S BRAIN SIGNALS ITSELF BY COMPUTER

(By Robert Reinhold)

NEW HAVEN, Sept. 14.—Direct two-way radio communication between an animal's brain and a computer has been established for the first time by a team of scientists at Yale University. It was used to enable the brain to control artificially one of its own functions.

In an experiment, electrodes implanted in a chimpanzee's brain picked up electrical brain waves, which were then transmitted to a computer by a small receiver-transmitter atop the animal's head.

The computer, programed to recognize special characteristics of the wave, returned a control signal to another part of the brain through the receiver.

Stimulated by the control signal, the latter part of the brain internally turned off the brain activity originally sensed by the computer.

While the exchange is of the most rudimentary sort, the feat is said by the Yale team to suggest promising new ways of treating mental and physical disorders in human beings. Moreover, it raises the prospect of establishing direct electronic communication from one brain to another.

The head of the team is Dr. José M. R. Delgado, a 55-year-old Spanish-born neurophysiologist at the School of Medicine. Dr. Delgado, a pioneer in this field, has attracted both attention and controversy in the past for his experiments inducing anger, fear, affection, pleasure and other emotions in animals and human beings by telemetry stimulation of specific regions of the brain.

The new work represents the first time that a two-way radio network has been devised, in which the brain itself determines the outside signals it receives without using the senses as intermediaries to convey information to the brain.

"We are now talking to the brain without the participation of the senses," said Dr. Delgado in an interview at his laboratory. "This is a pure and direct communication—I call it 'nonsensory communication.'"

Dr. Delgado said he expected to use the new technique on human beings within a year. One possible application is in the treatment of epileptics.

Theoretically, the computer could recognize the pattern of brain waves associated with the onset of a fit and trigger the inhibitory areas of the brain or inject a chemical.

PACEMAKER FORESEEN

Ultimately, he said, we may have internal brain pacemakers, controlling such things as breathing, motor functions and emotions by a similar system—much the way heart pacemakers work today.

Previously, Dr. Delgado has applied what he calls ESB, for electrical stimulation of the brain, to human beings in experimental efforts to calm violent mental patients and relieve pain by radio. He has also halted by radio a charging bull that was fitted with electrodes implanted in inhibitory regions of the brain.

All of this has prompted talk of "push-button people" and of dictators controlling the brains of whole armies. Such suggestions disturb Dr. Delgado, who believes the implications of his work are largely medical and scientific.

"Fortunately you cannot induce education by brain stimuli," he said. "All you can do is activate what is already there."

The technical details of the new work are to be published in the September issue of the journal Brain Research. A young male chimpanzee named Paddy was used in the experiment.

Other scientists have long implanted electrodes to study neural activity and treat such problems as intractable pain.

But these devices, connected by wire to the instrumentation, made it necessary to constrain the subject so that normal social interaction could not be studied.

"STIMOCEIVER" DEVELOPED

Therefore, Dr. Delgado has developed what he calls a "stimoceiver." This is a miniaturized combination radio transmitter, receiver and electrical stimulator that can be put into a box smaller than a pocket cigarette lighter.

With it, electrical electroencephalogram (EEG) patterns can be transmitted wirelessly from the brain and artificial stimuli received—while the animal remains free.

The experiments with Paddy began on Feb. 1, 1968, when a bundle of 100 steel wire electrodes were implanted painlessly in both sides of three areas of the brain—the caudate nucleus, amygdala and reticular formation. The wires were anchored in a socket atop the skull. The stimoceiver, enclosed in a teflon box, was mounted on the socket.

To stimulate natural conditions, Paddy was placed on an artificial island in the company of three other chimpanzees at the 6571st Aeromedical Research Laboratory at Holloman Air Force Base in New Mexico.

Dr. Delgado's work was supported by the Air Force until recently, when it was decided that it had no direct military application. Congress recently forbade the armed forces from supporting nonmilitary research.

The transmitting and receiving equipment was mounted nearby, and Paddy's brain and motor activity were monitored 24 hours a day. The experiments hinged on the pattern of electrical activity in a small almond-shaped structure in the brain called the amygdala.

WAVE PATTERNS OF BRAIN

The amygdala spontaneously produces electrical wave patterns with a characteristic shape called spindles at the rate of about 1,000 an hour. Spindles are thought to be linked to olfactory, or smelling, functions and are one of the easiest patterns to recognize.

The spindles were converted by the stimo-Reciver into FM radio signals and fed into a Donner Analog computer. The computer was programed to recognize the spindles and to produec another signal for the duration of each spindle.

This signal was then converted into another FM radio wave and transmitted back to the animal, where it was picked up by the stimoceiver. The stimoceiver then triggered an impulse to the reticular formation, an area in the brain stem connected with arousal.

Thus the information received by the reticular formation was directly contingent on the pattern of electrical activity in a distant area, the amygdala.

The results showed that each impulse to the reticular formation inhibited electrical activity in the amygdala. After two hours of such feedback—that is, a signal is modified by its own deviation—the rate of spindling was cut to about half of normal. It disappeared almost completely after several days.

At the same time, behavior changed. The return impulses caused a slight grimace. Paddy became less aggressive and excitable, and lost much interest in food. After the computer was disconnected, these changes persisted for two weeks, after which behavior and spindling rate returned to normal.

ONLY ONE ANIMAL USED

The experiment was done on one animal only, but repeated successfully several times over a year and a half. The animal has suffered no apparent ill effects from the electrodes.

Collaborating with Dr. Delgado were Dr. Victor S. Johnston, Dr. Jan D. Wallace and Dr. Ronald J. Bradley.

The experiment, Dr. Delgado said, demonstrates the feasibility of artificial feedback between two cerebral structures and "on-demand" stimulation of the central nervous system.

According to Dr. Delgado, all of this has important implications for research and medicine. Various conditions, including multiple sclerosis, Parkinson's disease, anxiety, fear, obsessions, violent behavior, could conceivably be controlled by direct stimulation of the brain, which ultimately underlies all mental and physical activity.

Dr. Delgado has also experimented with imparting sight and hearing to blind and deaf persons through direct stimulation of specific areas of the brain.

A number of researchers, including Dr. Delgado, have permanently implanted electrodes in human beings. One of the leaders in this field is Dr. Robert Heath at Tulane University in New Orleans. Dr. Heath has been using the technique to correlate brain activity with behavior and to treat explosive and depressed patients.

NEW INSTRUMENTS NEEDED

To make such treatment practical, Dr. Delgado believes it will be necessary to develop radio instruments that can be completely buried under the skin. An experimental model of such a device is being tested in monkeys at his laboratory, but application is some years off.

The doctor recognized that the philosophical implications of this kind of work are as great as the medical. However, he says that brain stimulation should be treated much like other biological interventions we have become accustomed to—innoculations, tranquillizers, fluoride treatment of water, food additives.

He believes brain research can provide a window to the understanding of personality and social behavior—not to manipulate but to improve.

Technology, he says, has neglected man. So little is known of what goes on in the brain, he says, that "we are not civilized in human behavior."

In his recent book, "Physical Control of the Mind," Dr. Delgado wrote:

"We are now on the verge of a process of mental liberation and self-domination that continues our evolution. Its experimental approach is based on the investigation of the depth of the brain in behaving subjects.

"It's practical applications do not rely on direct cerebral manipulations but on the integration of neurophysiological and psychological principles leading to a more intelligent education.

"We must create a future man with greater personal freedom and originality—a member of a psychocivilized society, happier, less destructive and better balanced than present man."

[From the Washington Post, June 3, 1970]

SCIENTISTS CREATE FIRST GENE IN A TEST TUBE

U. OF WISCONSIN TEAM'S FEAT MAY LEAD TO CONTROL OF LIFE

(By Victor Cohn)

The first synthesis of a gene, the basic unit of heredity, was announced yesterday as the result of a momentous five-year effort at the University of Wisconsin.

The historic feat hastens the day of genetic engineering: mastery by man of the very control chemistry of life. It was accomplished by a team headed by Dr. H. Gobind Khorana.

Nobel-prize-winning geneticist Joshua Lederberg at Stanford University called the achievement a "milestone" and one that came "two years earlier than I expected."

On some future day, scientists may manufacture genes or parts of genes to order, and use them to cure or prevent diseases, or even change personality.

Some scientists even foresee—or fear—future production of "tailor-made" human beings as the result of such engineering.

Others call this unlikely. There is sure to be wide agreement however, that the shy, 47-year-old Khorana—a native of India who won the Nobel prize for several earlier steps in 1968—has probably opened an epoch.

In their Madison, Wis., laboratory, Khorana and his colleagues duplicated the structure of one of nature's simpler genes: one found in yeast RNA (for ribonucleic acid). Specifically, they synthesized an alanine transfer-RNA gene, one that orders production of the RNA that carries some of the essential genetic information in yeast cells.

"Now that he has determined the rules" for chemical synthesis, "theoretically any desired gene could be made in the test tube," said a University of Wisconsin announcement that Khorana approved.

What Khorana did in more detail in his test tubes was to put a set of chemical building blocks called nucleotides into the sequence in which they occur in the natural yeast gene.

The Wisconsin group has yet to perform one ultimate—but hard—experiment checking the new gene for biological activity by introducing it into a living cell lacking this gene to transform the cell into a normal one.

Many other experiments are ahead. Khorana would like to know how the genes act more precisely in protein synthesis. He wants to know what chemical signals turn the gene on and off in a living cell. To do such things, he plans to modify specific parts of the synthetic molecule and observe the effects.

He has already started work on synthesizing a second gene—a transfer-RNA found in the bacteria E. coli and optimistically now expects to complete this work within a few months.

What Khorana and company have produced then is not a molecule to make better yeast—that would be a minor goal—but a methodology to assemble other genes and investigate the chemical structure of life.

Khorana shared the 1968 Nobel prize in medicine with Drs. Robert Holley (now at the Salk Institute) and Marshall Nirenberg of the National Institutes of Health at Bethesda. He talked to a few reporters yesterday but declined to hold a news conference.

"He expressly does not want a news conference; he wants to talk to scientists," a colleague said.

He plans to move with his team in the fall to Massachusetts Institute of Technology. Born in Raipur, India, he came to Wisconsin in 1960 as professor of biochemistry.

His efforts, he said when he received the Nobel prize might eventually lead to "manipulating biology" to cure cancer, diabetes or physical effects. Or "in the long distance future," he said, "the knowledge might allow for genetic planning of individuals—tailoring people to fit patterns, turning out athletes or intellectuals."

That, he insisted, is "a very, very long time off." But "in that context," he conceded, "we are in a very elementary but a necessary stage."

[From the Washington Post, March 12, 1971]

GENE IMPLANT SEEN STEP TO CELL CONTROL

(By Victor Cohn)

A long step toward genetic engineering—artificially correcting defects in human cells—has been taken at Oxford University.

Dr. Henry Harris and other scientists there have inserted into a deficient mouse cell some healthy genetic material from chick embryos, thus correcting the mouse cell deficiency.

The new genes remained part of the permanent cell machinery, moreover, and were duplicated as the now healthy cells grew and divided.

This has been done entirely in what biologists call "tissue culture": collection of cells in the laboratory. The next step will be to try to repeat the process in mice.

But, says the British journal Nature in an accompanying comment, "removing cells with some genetic defect from a (human) patient, treating them to introduce" a new gene or genes "and replacing the cured cells in the patient" is now "possible in principle."

There are many equally long or longer steps ahead. Genetic engineering. Nature emphasized, is not "imminent." Yet "it is important to say," the eminent journal noted, that "these experiments offer the exciting prospect, in theory at any rate, of evolving a therapy" for mutant and defective human genes.

A vital part of the accomplishment was this: Only pieces of chick chromosome material (chromosomes are little rods which contain genes) were transferred.

GENETIC ENGINEERING CURES DEFICIENCY IN A MOUSE CELL

These were too small to carry the chemical instructions for manufacturing antigens. This means they did not arouse antibodies—proteins which normally fight off all foreign tissue in the host.

It is this achievement (Nature calls it "most elegant") which raises the most hope that this kind of human cell therapy will one day be possible.

In their full scientific account, the British group—A. G. Schwartz, P. R. Cook and Harris, all of the Sir William Dunn School of Pathology at Oxford—tell how they:

Used an inactivated mouse virus as a kind of silent partner to carry the chick embryo material.

Thus incorporated small amounts of pulverized genes from chick red blood cells into a line of mouse cells unable to produce the enzyme IAP. This same deficiency in humans causes a rare and fatal hereditary disease, Lesch Nyhan syndrome.

Found that most of the hybrid cells thus produced still failed to make IAP and therefore died. But some survived because they now possessed the IAP that the chick genes coded. The chick genes were only loosely integrated in the mouse cell, yet integrated well enough to work this cure.

Is the chick-mouse synthesis a special case, or can the same thing be done in creatures? Nature asked the question and—in what seems to be advance notice of further laboratory progress—added: "It seems already that comparable cells derived from (other) organisms . . . can develop in a similar genetic transfer."

In the late 1940s, a National Cancer Institute scientist pointed out here, Dr. John Enders of Harvard got chick cells to grow polio virus by adding a carrier virus to get the polio virus inside them—after which they too accepted the polio virus's instructions.

Virus DNA (a genetic chemical) has been successfully introduced into cells in many other experiments.

What Harris and company have achieved, the scientist here explained, is an engineering advance: introducing a whole piece of chromosome that may have "hundreds and hundreds" of genes rather than the five or 10 of a small virus.

The Schwartz-Cook-Harris article in Nature was highly modest in wording. But its brief heading summed up their coup: "Correction of a Genetic Defect in a Mammalian Cell."

[From the Washington Post, Dec. 26, 1970]

BETHESDA, MD.,
December 21, 1970.

HUMAN REPRODUCTION

LETTER TO THE EDITOR:

The report by Stuart Auerbach ("Lab Grows Embryo Ready for Womb," December 17, 1970) of the current success in the laboratory culture of human embryos and the anticipated success in implanting these embryos in prospective mothers prompts numerous moral and political questions. I wish to address but a few of these.

The article reports that the scientists are ready to proceed with implantation if tests on the embryos can rule out the presence of genetic defects. One should question whether the limited tests for defects now available can declare these embryos "genetically fit." Further, manipulation of the embryos to conduct such tests may itself introduce damages, some probably not detectable until after birth. One must not forget that there is a human being (the child-to-be) upon whom these experiments are to be performed and who may suffer for our zeal and ignorance, an ignorance no more excusable because well-meaning.

But one may go further and ask whether safety, even if adequately measured, would be a sufficient warrant for going ahead. Surely, there is more at issue than providing a child for an infertile woman. Once introduced for that purpose, the technique can be used for any purpose. Indeed, the work described is a giant step toward the full laboratory control of human reproduction. What are the implications of this step, and of the others it makes possible, for the human-ness of human procreation or for the human family? What are the implications of establishing as a precedent the passing of genetic tests as a prerequisite for a title to be born? Should not the weighing of ethical considerations concerning the widespread use of the new technology enter into the decision to use it for the first time.

These ethical questions point to a political question. Laboratory control of fertilization and embryonic development is a major departure in human procreation whose human consequences, both private and public, are likely to be profound. It is no mere ordinary medical advance. Therefore, one must question the wisdom of leaving the decision to go ahead for the private judgment of a team of physicians and scientists (whose judgment I am not now questioning), or even for the collective judgment of the medical and scientific community. Is this not a decision which deserves full public deliberation and resolution?

We are all to often forced to cope belatedly with the untoward consequences of technological advance, consequences unanticipated because the primary goal was thought to be so obviously good, or because the decision to go ahead was made technocratically and without public deliberation. Let us not make the same blunders with respect to the awesome powers, now gathering, for manipulating the bodies and minds of men.

Sincerely,

LEON R. KASS, M.D.

[From the Hospital Tribune, May 4, 1970]

DEFINITION OF DEATH: A DOUBLE STANDARD

(By Eliot Corday, M.D.)

Is the medical profession setting up a double standard of death? Can the transplant surgeon be charged with homicide or body robbing? Will new definitions of death cause a domino effect which dislocates relationship between everyday medical, legal, and clerical practices?

Farfetched as this may sound, there is the possibility that such questions may arise in the public mind—because exageration is sometimes a common currency in public discussion—unless the medical profession refines its definition of death. Already, in view of the known resuscitative methods and life-support systems that may revive a patient from apparent death, the public has begun to question the criteria by which a live heart is removed from a dead donor. And ultimately, we must have the support of the public.*

As matters stand now—in what Samuel Johnson called "the fury of innovation"—we are in danger of antagonizing the public by appearing to be moving toward a double standard. One standard would be to accomodate the transplanters—certifying that death has occurred when there are no reflexes and the EEG trace it linear—in other words, cerebral death. The other standard for the everyday practice of medicine would be to continue to accept the age-old definition of death as the irreversible cessation of perceptible heart beat and respiration. And today this may have to imply that cardiac resuscitation, assuming it was available, had been attempted and failed—a question that has come up in at least one court case.

If we adopted such a double standard in our everyday practice, will the public begin to fear that we are moving toward euthanasia?

Two lawyers, Houts and Hunts, recently wrote that as long as any heartbeat or respiration can be perceived, either with or without mechanical aids, death has not occurred. Obviously, this would preclude successful heart transplantation.

Also, obviously, we cannot maintain a double standard of death. It would dent public confidence in medicine and prevent transplantations. So it is around this irritant that some pearl of wisdom must be formed. Among the perplexities we need to look at are: (1) the financial trauma to a patient's family if we were obliged to keep him alive by mechanical means when there is no possibility of recovery; (2) a new concept to provide a single standard of death to avert the possibility, however remote, of a charge of homicide or wrongful action against a transplanter—and if not wrongful action, the accusation of samurailike conduct. In feudal Japan a samurai warrior could test his sword against any passing peasant.

On the first point, there is no such legal requirement in this country. And in 1957, Pope Pius XII, while speaking out against euthanasia, also declared that there is a clear distinction between negative life and superior life with all the vital functions; the artificial prolongation of life, he said, is not "obligatory, particularly if it created too heavy a charge on the family." So it must be taken as a medical axion, legally and theologically, that the physician should not be obliged in every situation to use extraordinary life-prolonging procedures after it has been clearly established that there is no hope for the patient's recovery.

On the second point, an ad hoc committee of Harvard University has proposed criteria of irreversible coma: when respiration is maintained only by artifical means and this is withdrawn, spontaneous respiration would be impossible; a total unawareness of externally applied stimuli; no spontaneous muscle movement; no reflexes; a flat EEG. These have been generally accepted as a basis for the diagnosis of cerebral death to permit organ removal. Some transplant surgeons, however, have declared cerebral death while spontaneous respiration was still present.

Also in 1968, similar criteria were issued by 24 surgeons, immunologists, neurologists, and heart specialists called together in Geneva by the Council for International Organizations of Medical Sciences operating under the World Health Organization and UNESCO. They added two further guidelines: (1) the donor's heart must be in perfect condition at the time of removal; (2) an immunological examination should be made before the operation to determine the compatibility of donor and receiver. The scientists decided also that two independent teams should be deployed in heart transplant operations, one to establish the donor's hopeless condition, the other to perform the operation.

The Harvard criteria provide sound guidelines for the discontinuation of extraordinary life-prolonging procedures. But these and the Geneva guidelines still need to be ratified by the medical profession, the legal authorities, and the public. Otherwise we face the possible accusation that the concept of cerebral death is designed to meet the special interests of the transplanters; and we face the public's apprehension that this concept is a preface to euthanasia. We face, in short, an ethical crisis.

To avert this crisis, we need to determine whether there is adequate evidence that the moment of death may now be advanced to coincide with brain death, though cardiorespiratory activity is spontaneous. It would seem advisable to convene a Bethesda-type conference to try to arrive at this determination. Lawyers, clergymen, sociologists, perhaps even philosophers and cultural anthropologists should also be invited. The medical delegates, of course, would be the only ones to formulate scientific criteria. Any change requires careful study because it could start a chain reaction that might dislocate many relationships and standards of the everyday practice of medicine. But the advice of other professions may provide us with legal and historic precedent and with subtle moral guides to keep us from stumbling into some ethical or legal pothole.

Such a high-level conference would also give us the support that would increase the likelihood that our medical judgment, should we be able to arrive at one, will be accepted by the public. Certainly the public would be heartened by the fact that we have called upon other minds to share our moral responsibility and scrutinize our decisions.

Equally as important, we may harvest from such a meeting a new wisdom to accompany us should ethical problems arise from future scientific innovations.

EXCERPTS FROM POTENTIAL CONSEQUENCES OF EXPERIMENTATION WITH HUMAN EGGS

(By J. D. Watson)

The Biological Laboratories Harvard University, Cambridge, Mass., and The Cold Spring Harbor Laboratory, Cold Spring Harbor, New York; Presented Before the Twelfth Meeting of the Panel on Science and Technology Committee on Science and Astronautics, U.S. House of Representatives, January 28, 1971.

Several years ago a most remarkable frog grew up in Oxford. Its origin did not lay in the union of a haploid sperm cell with a haploid egg, the fertilization process which ordinarily gives each higher animal a mixture of paternal and maternal genes. Instead this frog arose from an enucleated egg, into which had been inserted a diploid nucleus from the intestinal cell of an adult frog. Microsurgical removal of the maternal nucleus from this egg had denuded it of any genetic material. But by subsequently gaining a diploid nucleus (as opposed to the haploid form found in a sperm) the egg acquired the chromosome number normally present in a fertilized egg. As such it could be activated to divide, thereby setting into motion the successive embryological stages which culminate in an adult frog.

The genetic origin of this frog was thus very different from that of all previous frogs, one half of whose chromosomes came from the male parent through the sperm, the other half from the female parent which produced the egg. Normal fertilization processes by combining genetic material from two different parents always generate progeny uniquely different from either parent. In contrast, the Oxford frog derived *all* its genetic material from the individual whose intestinal cell was used as the nuclear donor. The genetic complement of all its diploid somatic cells (as opposed to its haploid sex cells) was thus identical to that in the donor frog. So, in effect, it was an identical twin of the donor frog born some months before. Furthermore, since every adult frog contains millions of cells capable of being used as nuclear sources, the original donor could have served as the genetic parent of thousands of progeny identical to itself.

This type of reproduction is generally referred to as a *clonal* reproduction.

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The question of course arises, will this same basic principle hold for the large majority of differentiated cells? Now I suspect most biologists will guess yes. In general, very fundamental phenomena, of which differentiation is one, do not have a difference molecular basis from one organism to another. Moreover, it is already clear that differentiation in several plant species does not involve irreversible nuclear changes. Now it is routinely possible to produce mature plants starting from highly specialized somatic cells of diploid chromosome number. For example, mature carrot plants can be produced from single callus cells that are placed in proper nutritional environments. Thus it is highly likely that the embryological development of most higher animals, including man, involves the creation of countless numbers of totipotent somatic nuclei each capable of serving as the complete genetic material for a new organism. This means that, *theoretically*, all forms of higher animal life may in effect be capable of clonal reproduction.

If true, this situation could have very startling consequences as to the nature of human life, a fact soon appreciated by many magazine editors, one who commissioned a cover with multiple copies of Ringo Starr, another who gave us overblown multiple likenesses of the current sex goddess Raquel Welch. It takes little imagination to perceive that different people will have highly different fantasies, perhaps with some imagining the existence of countless people with the features of Picasso or Frank Sinatra or Walt Frazier or Doris Day. And would monarchs like the Shah of Iran, knowing they might never be able to have a normal male heir, consider the posibility of having a son whose genetic constitution would be identical to their own?

Clearly even more bizarre possibilities can be thought of, and so we might have expected that many biologists, particularly those whose work impinges upon this possibility, would seriously ponder its implications, and begin a dialogue which would educate the world's citizens and offer suggestions which our legislative bodies might consider in framing national science policies. On the whole, however, this is not at all what has happened. Though a number of scientific papers devoted to the problem of genetic engineering have casually mentioned that clonal reproduction may someday be with us, the discussion to which I am party, have been so vague and devoid of meaningful time estimates as to be virtually soporific.

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The general impression exists among biologists that the cloning of any mammal will be far from a routine task, if not impossible, over the foreseeable future. In particular, the techniques of micromanipulation used to insert nuclei into frog's eggs cannot now be applied to eggs in the mammalian size range. They are likely to be irreversibly damaged by the introduction of a nucleus whose diameter is only some two or three times less than that of the egg itself. And if somehow a trick were ever found to successfully insert a diploid nucleus, the equally challenging task of finding conditions for the in-vitro growth of the modified egg through to the adult stage would still lie ahead. Thus the clonal production of human beings has seemed to most geneticists an event so unlikely as to not be worth stirring up public attention.

This assessment would be correct if the pace of research on human reproductive biology would continue at the current rate. With a few exceptions, work on the early developmental processes in man has not been seriously pushed either here in the United States or elsewhere. As a result, there exists a scientific lacuna so serious that it deeply disturbs those people who realistically worry about over-population problems. They believe that more basic biological knowledge about human reproductive processes would be very helpful in slowing down the fearful rise in the number of human beings. Consequently, already there is much "population" money available to induce more people to move into the field of reproductive biology, hopefully to learn in great detail the step-by-step processes by which a human egg is ovulated, fertilized, cleaved, and moves down the oviduct to implant on the uterine wall.

A key ingredient to obtaining this information is the development of methods by which the early embryological stages of mammals can be studied in-vitro. For as long as study is restricted to work on intact animals, experimental work, as to be distinguished from observational analysis, will be virtually impossible. Most importantly, though unknown even to most biologists, the beginnings of first rate research on the in-vitro cultivation of mammalian eggs has already occurred. Techniques are in fact available for the isolation of mouse eggs, their fertilization in-vitro, and subsequent cultivation under test-tube conditions which permit growth to the sixty-four cell stage. At this point the embryonic body (called a blastocyst) can be surgically implanted back into the uterus of a living mouse, where it can eventually develop to the stage at which normal birth occurs.

This means that most of the techniques that will be needed for a clonal mouse are already available. The only serious obstacles remaining are the development of methods for the removal of the haploid maternal nucleus and the subsequent addition of a diploid adult nucleus. Now there are hints that the enucleation problem will not be serious. For some years it has been known that addition of the mitotic poison colchicine to preovulatory mice leads to abnormal meiotic divisions which frequently produce nuclear-

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* From the *American Bar Association Journal, vol. 55, pp. 629–632, July, 1969.*

free eggs. Moreover, very recent work suggests that colchicine in-vitro acts similarly. When it is added to unfertilized eggs which have been surgically removed from a living mouse, healthy enucleated eggs are produced.

And furthermore it looks like the nuclear insertion process might not be anywhere as tricky as first thought. This change of opinion is the result of the development of very simple methods for fusing two cells to yield a single cell containing the genetic compounds of both donor cells. Though the existence of rare examples of cell fusion was first clearly demonstrated in Paris by Barski in 1962, not until 1966 did Henry Harris and John Watkins working in the Pathology Department of Oxford University develop a routine method for easily fusing almost any two desired cells. Their contribution was the introduction of ultraviolet light-killed Sendai virus (a close relative of the common flu viruses). In some way not yet understood, adsorption of large numbers of Sendai particles so modifies cell surfaces that when two so-treated cells touch each other, portions of the opposing cell surfaces effectively dissolve, thereby creating one much larger cell containing two nuclei. Subsequently these nuclei often coalesce yielding a single nucleus containing all the chromosomes present in both original nuclei.

During the past three years, Christopher Graham, also at Oxford, has been using Sendai virus to fuse mouse eggs with diploid adult mouse cells. The resulting cells still retain the essential features of an egg because even the relatively small mouse eggs are much larger than most diploid adult cells. While the fused eggs can divide several times, they so far have not yet developed into blastocysts, the stage necessary for successful implantation into the mouse uterus. Conceivably this limitation results from the need to remove the zona pellucida (a normal protective covering) for the Sendai virus fusing trick. Conditions must thus be found either to fuse eggs which retain the zona pellucida or which permit unprotected denuded eggs to develop normally to blastocyst. A reasonable guess is that Graham will succeed, if not this year, most likely within this coming decade. The clonal mammal then will no longer be science fiction.

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At first consideration, it would seem likely that cloning of many domestic species would have to occur before serious thought would be given to the development of clinical procedures which would make human cloning more than a theoretical possibility. This way of thinking presupposes that the primary purpose for such methodological development need be cloning itself. If this in fact were the objective, the variety of moral and legal objections that would be bound to crop up most certainly would effectively prevent the legal granting of the medical fecilities needed for extensive in-vitro experiments with human eggs.

If, however, the stated objective is to probe the human reproductive process so that better contraceptive methods can be obtained, the reaction of the general public will be much harder to predict. Though many people will look with horror at any test-tube work with human eggs, others will breathe more easily that something is being done to prevent the world from being crushed by over-population. Until several years ago, this latter group was numerically relatively small and without favor in virtually any political circle. Today, however, taboos which would have seemed unbreakable just a decade ago are rapidly being overturned, witness the recent action of the United States Congress in overwhelmingly passing legislation that would promote family planning. Even more significant was the action of New York State in making abortions the right of any women who so desire them.

Moreover, the development of a simple method for the predetermination of the sex of unborn children might generate considerable support, even if the methods involved the selective abortion of the not-wanted sex. At the same time I would foresee violent objections from other quarters, conceivably making the introduction of such sex-determining techniques illegal throughout much of the world. On the other hand, I would be surprised if all countries reacted unanimously. Most likely there would exist some countries where such sex-determining abortions were legal. If so, affluent families already having four sons could with absolute certainly have the pleasure of knowing that their last baby would be a girl.

The prognosis thus seems virtually inevitable that for one reason or another the number of people studying all aspects of human embroyogenesis will greatly increase. Not only will the amount of classical observational analysis increase, but even more important, direct experimentation with human eggs most likely will soon be the main preoccupation of a number of intelligent, highly-qualified biologists.

Already there exists one such individual, R. C. Edwards, an English reproductive biologist now working in the Physiology Department of Cambridge University. Originally trained as an embryologist and with some ten years experience in growing mouse embryos in-vitro, he focuses his attention on the test-tube growth of human eggs.

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Edwards, together with his clinical colleague, P. C. Steptoe of Oldham General Hospital, have devised a simple surgical method for the removal of healthy human eggs after they have completed much of meiosis, but befor. the ovulation step which releases free eggs from their follicles into the oviduct. Called laparoscopy, it is a relatively minor operation which, while requiring general anesthesia, generally only needs a twenty-four hour hospital stay. Prior to the operation, a regimen of hormone (gonadotrophins) treatment is given to induce follicle maturation and egg development through the early stages of meiosis. Laparoscopy is then performed, some four hours before ovulation would occur normally. The ovaries so exposed usually contain highly enlarged follicles with thinning walls, through which the desired oocytes can be carefully removed. Their procedures have now reached the state where they can obtain healthy eggs from over half the follicles examined.

Such pre-ovulating oocytes are very suitable for subsequent embryological investigations. Fertilization rapidly ensues after human sperm addition, and in contrast to those eggs which had undergone meiotic divisions in-vitro, these invivo matured eggs generally begin normal cleavage divisions. Already many embryos have developed to the eight-cell stage while a few have become blastocysts, the stage where successful implantation into a human uterus should not be too difficult to achieve. In fact, Edwards and Steptoe hope to accomplish implantation and subsequent growth into a normal baby within this coming year.

The question naturally arises why should any women willingly submit to such operations. There is clearly some danger involved every time Steptoe operates. Nonetheless, he and Edwards believe that the risks involved are more than counterbalanced by the fact that their research may develop methods which make their patients able to bear children. All their patients, though having normal menstrual cycles, are infertile conceivably because many have blocked oviducts which prevent passage of their eggs into the uterus. If so, in-vitro growth of their eggs up to the blastocyst stage may circumvent their infertility, thereby allowing normal childbirth. Moreover, since the sex of a blastocyst is easily determined by chromosomal analysis, such women would have the possibility of deciding whether to give birth to a boy or a girl.

Clearly, if Edwards and Steptoe succeed, their success will be followed up in many other places. The number of such infertile women, while small on a relative percentage basis, is likely to be large on an absolute basis. Conceivably within the United States there could be 100,000 or so women who would like a similar chance to have their own babies. At the same time we must anticipate strong if not hysterical, reactions from many quarters. The certainty that the ready availability of this medical technique will open up the possibility of hiring out unrelated women to carry a given baby to term is bound to outrage many people. For there is absolutely no reason why the blastocyst need be implanted in the same woman from which the pre-ovulatory eggs were obtained. So, many women with anatomical complications which prohibit successful childbearing, would be strongly tempted to find a suitable surrogate. And it is easy to imagine that many women who just don't want the discomforts of pregnancy would also seek this very different form of motherhood. And of even greater concern would be the potentialities for misuse by a savage totalitarian government.

Some very hard decisions may soon be upon us. For it is not obvious that the vague potential of abhorrent misuse should weigh more strongly that the unhappiness which thousands of married couples feel when they are unable to have their own children. Different societies are likely to view the matter differently and it would be surprising if all come to the same conclusion. We must, therefore, assume that techniques for the in-vitro manipulation of human eggs are likely to be general medical practice, capable of routine performance through the world within some ten to twenty years.

The situation would then be ripe for extensive efforts, either legal or illegal, at human cloning. No reason, of course, dictates that such experiments need occur. Most of the medical people capable of such experimentation would probably totally stay clear of any step which in any way looked like its real purpose was to clone. But it would be shortsighted to believe everyone will instinctively recoil from such purposes. Some people may very sincerely believe the world desperately needs many copies of the really exceptional people if we are to fight our way out of the ever increasing computer mediated complexity that makes our individual brains so frequently inadequate.

Moreover, given the widespread development of the safe clinical procedures for handling human eggs, cloning experiments would not be prohibitively expensive. They need not be restricted to the super powers—medium sized, if not minor countries, all now possess the resources needed for eventual success. There furthermore need not exist the coercion of a totalitarian state to provide the surrogate mothers. There already are such widespread divergences as to the sacredness of the act of human reproduction that the boring meaninglessness of the lives of many women would be sufficient course for their willingness to participate in such experimentation, be it legal or illegal. Thus, if the matter proceeds in its current nondirected fashion, a human being—born of clonal reproduction—most likely will appear on the earth within the next twenty to fifty years, and conceivably even sooner, if some nation actively promotes the venture.

The first reaction of most people to these conclusions may be one of despair. The nature of the bond between parents and their children, much less everyone's values about their individual uniqueness, could be changed beyond recognition, and by a science which they never understood but which until recently appeared to provide more good than harm. Certainly to many, our most sensible course of action would be to de-emphasize all those forms of research which would circumvent the normal sexual reproductive processes. If this step were taken, experiments on cell fusion would no longer be supported by federal funds or tax-exempt organizations. Prohibition of such research would most certainly put off the day when diploid nuclei can satisfactorily be inserted into enucleated human eggs. Even more crucial would be to take steps quickly to make illegal, or reaffirm the illegality of, any experimental work with human embryos. With both these actions taken, our current value systems might survive somewhat longer.

Neither of these prohibitions, however, is likely to take place. In the first place, the cell fusion technique now offers one of the best avenues for understanding the genetic basis of cancer. Today all over the world, cancer cells are being fused with normal cells to pinpoint these specific chromosomes responsible for given forms of cancer. In addition, fusion techniques are the basis of many genetic efforts to unravel the biochemistry of diseases like cystic fibrosis or multiple sclerosis. Any attempts now to stop such work using the argument that cloning represents a greater threat than a disease like cancer is likely to be considered irresponsible by virtually anyone able to understand the matter.

Though more people would initially go along with a prohibition of work on human embryos, many may have a change of heart when they ponder the real mess confronting us by the population explosion. The current projections are so horrendous that responsible people are likely to consider the need for more basic embryological facts much more relevant to our self-interest than the not-very-immediate threat of a few clonal men existing some decades ahead. So, scientists like Edwards are likely to get to go-ahead signal even if, almost preversely, the immediate consequences of their research may be the production of even more babies.

Complicating any possible effort at effective legislative guidance is the multiplicity of places where work like Edwards' could occur, thereby making most unlikely the possibility that such manipulations would have the same legal (or illegal) status throughout the world. We must assume that if Edwards and Steptoe produce a really workable method for restoring fertility, large numbers of women will search out those places where it is legal (or possible), just as new they search out places where abortions can be easily obtained.

Thus, all nations formulating policies to handle the implication of in-vitro human embryo experimentation must realize that the problem is essentially an international one. Even if one or more countries stop such research, their action could effectively be neutralized by the response of a neighboring country. This most disconcerting impotence even holds for the United States. If our congressional representatives, upon learning where the matter now stands, decided they wanted none of it and passed very strict laws against human embryo experimentation, their action would not set back seriously the current scientific and medical momentum which brings us close to the possibility of surrogate mothers, if not human clonal reproduction. This is because the relevant experiments are not being done in the United States, but largely in England. This is partly a matter of chance, but also a consequence of the advanced state of English cell biology. In certain areas it is far more adventurous and imaginative than its American counterpart. Now there is no American university with the strength in experimental embryology that Oxford possesses.

We must not assume, however, that today the important decisions lie only before the British government. Very soon we must anticipate that a number of biologists and clinicians of other countries, sensing the potential excitement, will move into the area and so even if the current English effort were stifled, similar experimentation could soon begin elsewhere. Thus it appears to me most desirable that as many people as possible be informed about the possible new ways of human reproduction and their potential consequences, both good and bad. Conceivably an international consciousness might be apparent and some form of inter-

national agreements might be negotiated before the cat is totally out of the bag. Admittedly, the vast effort, needed for even the most limited international arrangement, will deter those who believe the matter now is of such marginal importance that in effect it might be a red herring designed to take our minds off our callous attitudes toward war, poverty, and racial prejudice. But if we do not think about the matter now, the possibility of our having a free choice will one day suddenly be gone.

REFERENCES

1. J. B. Gurdon, "Transplanted Nuclei and Cell Differentiation," *Sci. Amer. 219*:24, 1968. A very good introduction about the experiments which led to the first clonal frog.

2. C. F. Graham, "The Fusion of Cells With One and Two-cell Mouse Embryos," in *Heterospecific Genome Interaction*, Wistar Institute Symposium Monograph No. 9, Wistar Institute Press, Philadelphia, 1969. The only discussion now in print about the technical problems which must be solved to achieve clonal reproduction in mammals.

3. R. G. Edwards, "Mammalian Eggs in the Laboratory," *Sci. Amer. 215*:72, 1966. An excellent introduction to the problem involved in growing mammalian eggs in a test tube.

4. Gardner, R. L. and R. G. Edwards, "Control of the Sex Ratio at Full Term in the Rabbit by Transferring Sexed Blastocysts," *Nature 218*:346, 1968. A convincing demonstration that the sexing of embryos at the blastocyst stage need not interfere with subsequent embryonic development.

5. Edwards, R. G. and R. E. Fowler, "Human Embryos in the Laboratory," *Sci. Amer. 223*:45, 1970. A popular account of the first successful growth of human embryos to the blastocyst stage.

6. Steptoe, P. C. and R. G. Edwards, "Laparoscopic Recovery of Preovulatory Human Oocytes after Priming of Ovaries with Gonadotrophins," *Lancet 1*:683, 1970. A description of the medical techniques worked out to obtain healthy preovulatory eggs.

7. Edwards, R. G., Steptoe, P. C. and J. M. Purdy, "Fertilization and Cleavage *In Vitro* of Preovulatory Human Oocystes," *Nature 229*:1307, 1970. The first scientific report of the development of preovulatory eggs after in-vitro fertilization.

[From the Washington Post, Feb. 4, 1971]

DNA AND THE SORCERER'S APPRENTICE

Man has come to be where he is in part because—at least until Hiroshima—he has considered anything that seemed possible by way of scientific discovery and technological capability to be *ipso facto* desirable. Lately, however, an increasing number of scientists has become increasingly worried that man, like the Sorcerer's Apprentice, may be unable to control the forces he keeps unleashing—that progress in science and technology is coming far faster and more easily than progress in our ability to deal with the social, political and moral implications of our discoveries.

One such worrier is Dr. James D. Watson, the Nobel-prize-winning co-discoverer of the structure of DNA, the heredity molecule and the author of "The Double Helix," a book that gave thousands of laymen a fascinating and human glimpse of these awesome scientific endeavors. Dr. Watson told the House Science Subcommittee a few days ago that any day now British scientists may produce a human embryo that can be placed inside a woman who will bear the child. "Then all hell will break loose," he said. For the next logical step will be to engineer biologically a human being by screening out "undesirable" characteristics and otherwise manipulating the female egg cells and male sperm cells before they are joined.

Scientists can see much obvious good resulting from these experiments. One might be an understanding of the genetic basis for cancer and other diseases. But Dr. Watson and others also have no difficulty imagining fearful abuse, not the least of which would be a drastic change in the nature of the bond between parents and their children and in the values we now attach to man's individuality. And worse. The "scientific" experiments in Hitler's concentration camps—the biological engineering for other than research purposes—are still too fresh on many minds to dismiss as mere nightmares. There is enough of what George Orwell called "double-think" even in our own, open society, to make it at least feasible that, once test-tube production of an unlimited number of duplicate embryos becomes possible (Dr. Watson deems this likely in 20 or 50 or perhaps five years) someone will set out to produce a master race or supermen.

Dr. Watson and a number of his colleagues, at any rate, fear that if we do not think about these matters now, "the possibility of our having a free choice will some day suddenly be gone." He suggested that the United States take the lead in forming an international commission to make this kind of biological engineering illegal.

Illegal? At first thought, a good many people will surely feel that this could only dangerously tempt another Sorcerer's Apprentice to invoke governmental control over some other quest for knowledge; international control, furthermore, seems a naive hope at best. So we share these first tentative thoughts. But we also urge second thoughts. And third and fourth ones, because the issue is incredibly complex, and therefore much too important to be allowed to become polarized between wishful thinkers and "realistic," first-thought-only thinkers. It is going to take broad, as well as hard, thinking, by which we mean, if you will pardon the cliche, that the application of these bio-medical developments is far too serious a matter to be left to the bio-medical scientists alone. This is why Dr. Jonas Salk is inviting philosophers as well as physical scientists to his Institute in La Jolla and why the Committee on Life Sciences and Social Policy of the National Research Council and the Institute of Society, Ethics and Life Science seek to draw lawyers and scientists in a variety of disciplines into their search for a middle ground between statutory limitations on certain research and pragmatic laissez-faire.

We desperately need this search. And to spur it along, we need broad discussion on the ever more urgent question of whether we dare continue to let material progress be our only guide.

[From the Washington Post, Feb. 24, 1971]

EXPERIMENTS ON HUMANS

In your most thoughtful editorial of Feb. 4, you discuss many of the matters which I talked about recently before the House Science and Astronautics Committee. The International Commission on Genetic Engineering that I proposed be set up, however, would not have as its purpose the outlawing of human embryo experimentation. Instead its task would be to assess the state of the art, and so be in a position to advise the world's governing bodies of the particular consequences of any given technique in genetic engineering.

Some governments, upon thoughtful consideration, might wish to ban certain manipulations (e.g. human cloning). But in other cases, there may be general agreement that certain procedures (e.g. test-tube conceptions to overcome infertility due to oviduct blockage) are in the national interest and should be actively promoted. In any case, I think the matter is much too important to be left in the hands of the scientists whose careers might be made by the achieving of a given experiment. In no case should we forget that the products of these experiments will be human beings, which we must afford the same opportunities for a meaningful life that are now given to children born of "God's" will.

J. D. WATSON,
Professor, Molecular Biology, Harvard University; Director, Cold Spring Harbor Laboratory.
CAMBRIDGE.

[From the New York Times, July 3, 1970]

RX FOR CHILD'S LEARNING MALADY

(By Robert Reinhold)

PROVIDENCE, R.I., July 2.—A few months ago Jackie D., a 6-year-old boy with big brown eyes, was so bad that his mother was at her wits' end.

He could not sit still, he fought with all the other children on the block, was so clumsy that he could not ride a bicycle, had trouble reading and got so frustrated with his first-grade arithmetic that he would tear up his lessons.

But today, Jackie was not his usual self. He deftly climbed up and down a ladder and did somersaults under the approving eyes of Dr. Eric Denhoff, a pediatric neurologist.

In fact, Jackie has not been himself for sometime now—ever since he started getting an amphetamine-like medicine called Ritalin a few months ago. Now he is quiet, coordinated and has even done well enough in his lessons to be promoted to second grade.

Jackie is one of countless thousands of American youngsters with normal or even high intelligence who get Ritacin or amphetamines. The aim is to counter a complex and little-understood learning and behavior disorder sometimes called "minimal brain dysfunction" that afflicts as many as three million children.

GROWING ACCEPTANCE

The treatment is a widely accepted and growing one—if still somewhat controversial. It has been used throughout the United States for 10 or 15 years, often yielding results that one expert called "black magic when it works."

The change it induces, often within hours, is described by doctors, parents and teachers as "remarkable" or "amazing."

But amid mounting concern with pill-popping, many medical and laymen have expressed worry over the potential long-term effects of amphetamines, which are widely abused. Moreover, one side effect is loss of appetite, which is particularly undesirable in disadvantaged children who may be undernourished to begin with.

The practice has sporadically generated public dispute. A number of physicians and laymen have expressed fears about long-term effects. In Omaha black parents were recently reported to have protested that their children were being drugged into submission.

According to the best estimates, from 5 to 20 per cent of American children suffer from this disorder, making it a problem of epidemic proportions.

Such children, usually boys, are all too evident in almost every classroom. They jump up and down, throw paper airplanes at the teacher, fight and shove on the lunch line, can concentrate for only a short time, frustrate easily and often do so poorly in school work that they eventually drop out despite good intelligence.

Very frequently this "hyperkinetic" behavior is linked to marked perceptual impairment; that is, visual and auditory signals are not assimilated properly. The child may read words and letters backward, a problem sometimes called dysiexia, or confuse the meaning of sounds.

This neurological disorder, possibly a result of subtle brain damage during or soon after birth, has been found in many but not all cases to respond dramatically to amphetamines, drugs that are normally used, and sometimes abused, to speed up bodily processes.

But for reasons that are not fully clear these stimulants have the paradoxical effect of calming hyperactive pre-puberty children, allowing them to concentrate for normal periods of time.

The drugs do have some side effects—largely loss of appetite and insomnia. Also, there have been reports of children swapping their pills in the school yard with unfortunate effects.

The most commonly used medications are Ritalin, made by CIBA, and Dexedrine and Benzedrine, made by Smith, Kline and French.

"These drugs had been called the penicillin of children with learning disabilities," said Dr. Denhoff, director of the Meeting Street School, an Easter Seal-supported school for handicapped children here. Over the last 2 years, he has maintained 3,000 or so hyperkinetic children on drugs, often with spectacular results.

In fact, it was only a few miles from where Dr. Denhoff was examining Jackie D. that the value of amphetamines was discovered in 1937 quite accidentally by Dr. Charles Bradley, then director of the Bradley Hospital in East Providence, R.I.

Dr. Bradley noticed that drugs he had been giving to control weight problems in disturbed children also seemed to improve their behavior.

SYMPTOMS MASKED

The treatment, which may last for many years, can be likened to the use of insulin for diabetics. That is, it does not cure the underlying neurological disorder, but it masks the symptoms enough to allow the child to become organized, to cope with his environment and to respond to special therapy that is often needed in addition to the medication.

The treatment is not used for children with learning or behavior problems. It is connected with mental retardation, emotional disturbance or psychosis.

The dose varies, but is usually around 30 milligrams a day, about the same that an adult taking amphetamines to lose weight would get, but considerably less than hippies shooting "speed." A 10 milligram tablet of Ritalin costs about 10 cents, so that a week's treatment runs about $2.

Various studies have shown that young children do not become addicted or develop tolerance for the drugs—and that the medication can be readily withdrawn after puberty, when minimal brain dysfunction often remits spontaneously.

While physicians have been using the drugs empirically for 30 years, there have been few controlled scientific studies. One of the first to start such studies was Dr. Leon Eisenberg, chief of psychiatric services at the Massachusetts General Hospital in Boston, and his associate, Dr. C. Keith Conners, a psychologist.

DRUGS HELD VERY SAFE

"When used properly, they are remarkably safe—even safer than penicilin," said Dr. Eisenberg, who has tested about 750 children.

Referring to fears that children were being doped up, he said:

"The basic confusion is to apply standards which were developed in adults to children without recognizing the very marked difference in response to his agent."

He and Dr. Conners have just completed an experiment in which 75 children were broken up into three groups. Twenty-five were given Ritalin, 25 Dexedrine and 25 a placebo with no medicine. Each child was given a wide battery of intelligence and perception tests before and after medication.

SURVEY OPTIMISTIC

The experiment was "double blind", meaning that neither the children, parents nor testers knew which children were getting the drugs. The results showed "extremely strong" beneficial effects of the stimulants on a variety of cognitive, perceptual, attentional and learning tasks, including the so-called Draw-a-man test in which the child is asked to draw a human figure.

Similar results were obtained recently by Dr. Denhoff and Dr. Anthony Davids, a professor of psychology at Brown University, in a study of 42 children at the Governor Cen-

ter School in Providence. However, Dr. Davids believes much more study is needed before he can say conclusively that the drugs aided learning.

In a survey of studies conducted through 1967, Dr. J. Gordon Millichap and Dr. Glenn W. Fowler of Northwestern University found that 83 per cent of 337 children given Ritalin by various scientists had shown improvement while only 1 per cent got worse from the drug. Undesirable side effects were reported in 14 per cent of the cases.

As for the amphetamines (benzedrine and dexedrine), improvement was found in 69 percent of 610 cases and a worsening in 11 per cent.

In an attempt to measure the long-term effects, Dr. Eisenberg's group recently followed up on 100 children given drugs by Dr. Bradley in the nineteen thirties and nineteen forties. No indication of addiction or other drug-induced emotional or psychological damage was found.

Dr. William S. Langford, director of the pediatric language disorder clinic at Columbia's College of Physicians and Surgeons in New York, has been using the amphetamines since 1938 and Ritalin more recently.

"I don't think it's a learning pill," he said of Ritalin, "but our impression is that it is a safe drug—it keeps kids in school." Dr. Langford said that he had one child on it from age 3 to 13, the boy went on to complete college successfully.

The achievement has probably gained its greatest foothold in California. There, Dr. Sidney Adler, of Anaheim, a consultant to eight school districts in Orange County, has 2,000 children including 200 college students, on various drugs.

"I have saved many many kids from going down the drain," Dr. Adler said.

As elsewhere, school systems in California do not prescribe the drug. This is done by private physicians, often after a teacher or school nurse suggests that the parents seek medical help.

The chemical effects of the drugs are not clear. One theory holds that children with the disorder have immature nervous systems and that the stimulants affect certain immature parts of the brain, allowing the child to use his cortex, which controls logic and reasoning.

A number of pediatric authorities believe that some doctors have used the drugs too readily and have urged caution.

"No doctor should use any of these drugs lightly," said Dr. Robert Cook of Johns Hopkins Medical School. "The whole drug culture of our society is a worry, but in appropriately selected patients it may be as effective as insulin in diabetes."

[From the Washington Post, Sept. 30, 1970]

FDA WARNS AGAINST USES OF "BEHAVIOR" AMPHETAMINES

(By Robert C. Maynard)

Federal Food and Drug Administration officials have warned physicians in Omaha, Neb., against the use of two drugs that had been commonly prescribed there for the "behavior modification" of schoolchildren.

The revelation was among several that emerged in a long day of testimony in Congress yesterday on the use of amphetamine-type drugs to curb the behavior of "hyperactive" children.

Minutes after the FDA warning was introduced to the Right to Privacy Inquiry of the House Government Operations Committee, a Little Rock, Ark., physician testified that one of the drugs was among those used in his behavior modification program.

"That's one of the great concerns about the use of these drugs," said Rep. Cornelius Gallagher (D.-N.J.), chairman of the inquiry. "You are using drugs that FDA says are dangerous and you didn't even know the drugs were dangerous. We should suspend the use of these drugs for this purpose until more is known."

His remarks were addressed to Dr. John E. Peters of Little Rock, who said he uses one of the drugs, Tofranil, for children with learning disabilities.

Neither Tofranil nor the other drug, Aventyl, should be used in children, and the FDA said it "now specifically warns against such use." The agency advised Dr. Byron B. Oberst of Omaha of this in a letter on Aug. 6. Dr. Oberst had been quoted in an article earlier in The Washington Post as saying that Tofranil and Aventyl were among several drugs he prescribed for modifying the behavior of children. The most common drug is Ritalin.

The FDA in its letter to Dr. Oberst emphasized that Tofranil's labeling specifically warns against its use in children. Its side effects include constipation, difficulty in focusing the eyes, precipitation of glaucoma, nausea, vomiting and mild symptoms of Parkinsonism among others.

Aventyl, the agency reminded Dr. Oberst, had been re-labeled to warn against its use in the treatment of children. Its known side effects include fall of blood pressure, tremors and bleeding into organs.

The FDA said in its letter that if Dr. Oberst wished to use these drugs in children, it would constitute an experiment and he would have to apply for a special permit.

Dr. Peters, head of the division of child and adolescent psychiatry at the University of Arkansas Medical Center, said he would suspend the use of Tofranil "until this is cleared up."

The discovery that the FDA had warned a doctor against the use of Tofranil in children came late in the day's testimony and after representatives of the agency had testified.

Dr. Dorothy Dobbs, the agency's director of the Division of Neuro-Pharmacological Drug Products, was asked whether she had investigated the use of drugs for behavior modification in Omaha. She said she had telephoned Dr. Oberst and determined that nothing irregular was taking place.

Dr. Oberst is one of several physicians in Omaha involved in a program for children with behavior and learning disabilities. Many of the children had been placed on amphetamines.

It was well after the testimony of Dr. Dobbs and several other FDA witnesses that the existence of the letter from the agency's legislative liaison, M. J. Ryan, was introduced by Theodore J. Johnson, a black chemist and Omaha resident. The letter had been addressed to Ernie Chambers, an opponent of the drug treatment approach to hyperactive children and an Omaha candidate for the Nebraska legislature.

"I am very disturbed," Gallagher said after Johnson introduced the FDA's letter. He charged that the agency had said that "everything is hunky dory" about using amphetamine-type drugs in children, only for the committee to discover later that two common drugs in such treatment are declared dangerous for children.

FDA officials could not be reached last night for comment, but Gallagher said before the hearing recessed that the agency would be recalled later.

Sally R. Williams, president of the Department of School Nurses of the National Education Association, was among those witnesses who said she felt stimulant drugs were safe if given to children under careful conditions.

But Gallagher hammered away throughout the day's testimony at the fact that amphetamines, commonly known as "speed," are a major cause of drug abuse in the United States.

The FDA witnesses had said there was no evidence of a link between drug abuse and the administration of such drugs to children.

Don Warner, retired assistant superintendent of schools in Omaha, said he was concerned that the national attention had made it appear that the school system was dispensing drugs. He said only private physicians prescribe the drugs.

Wild Rice

United States of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 92d CONGRESS, FIRST SESSION

Vol. 117 WASHINGTON, MONDAY, MARCH 29, 1971 No. 44

Senate

By Mr. MONDALE:

S. 1388. A bill to authorize the Secretary of Agriculture to carry a special research program on wild rice. Referred to the Committee on Agriculture and Forestry.

Mr. MONDALE. Mr. President, today I am introducing legislation which will authorize the Department of Agriculture to spend $2 million over the next 10 years to conduct a research program for wild rice. In the past various appropriations have been made by the Federal Government and some private investors for this purpose, but what is really needed to develop the full potential of this important crop is enough money and enough direction to conduct a long-term, steadily funded research project. The research would boost the economies of Michigan, Wisconsin, and Minnesota. The agriculture experiment station at the St. Paul campus of the University of Minnesota has been carrying out some research for the past few years, mostly in the development of an improved strain. Because nearly 60 percent of the world's wild rice harvest comes from the Indian Lake area of Minnesota, I hope that this area will benefit proportionately from funds allocated.

By way of background, wild rice has been harvested primarily by Indians who used their harvest as a staple food. The natural stands today are located on Indian land. According to the Bureau of Indian Affairs, there are nearly 10,744 acres of wild rice producing areas on wild rice tribal lands in Minnesota. Though annual production varies dramatically, in 1967, 1⅓ million pounds were harvested from two reservations alone. In Minnesota harvesting on the tribal lands is restricted to Indian labor. In 1968, 18,805 people harvested wild rice with an average per capita income for rice harvesters in Minnesota at about $88. There is also a ban against the use of mechanical harvesting equipment in the natural stands.

Retail prices of wild rice have fluctuated from $3.25 a pound in the mid-1950's to $15 a pound in 1966. Currently it is selling for over $5 a pound retail. The market is growing, and with a more controlled harvest could be increased still more. Wild rice mixes, frozen pouches, and casseroles are expected to increase demand and expose steadily.

But production of wild rice is hampered by some severe problems and there has been no way to date to assure the size of an annual crop. Shattering of the seed head, the wild rice worm, fungus conditions, crowding by other lake plant life, and consumption by wildlife. Wild rice ripens gradually over a period of 10 days, the ripening progressing from the top downward. As the top grains ripen, they "shatter or fall into the water. Each plant must be harvested several times to hold shattering losses to a minimum. As it is, in the natural stands where harvesting is done by hand only 5 to 10 percent of the rice is recovered. Some work has been done to perfect a noshattering seed, but the seed successfully produced is not yet available for common use. Scientists at the University of Minnesota estimate that it may take at least 10 years to develop a proven nonshattering seed for wide distribution. There is also not enough knowledge about the wild rice worm or the smut which affects the crops. These are problems which will also have to receive research attention.

The end which scientists and rice growers are looking for is a successful predictable, and profitable cultivated annual green rice crop. There is a growing demand for the rice. It is nutritious and the exposure the crop is getting through major processed food companies are making it more popular. But the inability of producers to assure a sizable crop year after year has kept sales low.

Some companies are moving toward paddy production. In paddies mechanical harvesting equipment can be used and rather than the 4 to 10 percent yield from harvesting, 30 to 40 percent of the grain can be gathered by machine. Successful experiments in paddy growing in the past 3 years have widely increased interest and enthusiasm for possibilities in the profitable production of green rice. Many Indians who have opposed paddy cultivation in the past as a threat to their economy are now looking more favorably to a more controlled harvest. There are thousands of acres which could be developed for paddy rice if the proper research is funded. The diseases which presently bother natural stands could become more severe problems as stands are heavier and fertility is higher. Successful production of green rice is dependent on specific water chemical and water level and flow conditions. Obviously when raising the crop tables on a more artificial nature, these water factors will have the to be thoroughly researched. New harvesting equipment will have to be developed and processing plants will have to be established with careful attention to storage and effective commercial distribution. Of course, hand in hand with an increased ability to produce will come needs for promotion efforts.

Research can open new acres to production and increase production three to four fold. It can assure a stable crop and increased commercial sales. The possibilities for more employment and a rise in per capita income for those involved in a wider green rice production and a better life for the Indians of the areas involved more than justify the request for $2 million for research.

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Vol. 117 WASHINGTON, MONDAY, MARCH 29, 1971 *No. 44*

Senate

By Mr. MONDALE (for himself and Mr. BROOKE):

S. 1389. A bill to promote the foreign policy and best interests of the United States by authorizing the President to negotiate a commercial agreement including a provision for most-favored-nation status with Romania. Referred to the Committee on Finance.

THE ROMANIAN TRADE ACT OF 1971

Mr. MONDALE. Mr. President, since 1949, the United States has pursued a policy designed to prevent trade with Communist nations from threatening in any way the security or national interest of the United States.

We are still pursuing this basic policy, most notably in our export controls which prohibit the export of U.S. goods or technology which could contribute to the military potential of Communist nations or in any other way be contrary to the national interest of the United States.

But in addition to policies, laws, and regulations such as these, we also carry on our books a number of other provisions which, if they ever indeed contributed to our national interest and/or military security, do not do so today. Some of these restrictions, in fact, seem actually to be counterproductive, contributing to nothing but the economic benefit of our Western competitors and the continued economic and political domination of East Europe by the Soviet Union.

One such policy—surely the most damaging symbol of irrational hostility toward the East—is the denial of most-favored-nation treatment to all nations of Eastern Europe except for Yugoslavia and Poland.

The effect of such a denial is to impose upon the products of the rest of East Europe the old Smoot-Hawley tariff rates. Given such extraordinary discrimination against their products, there is little hope for any major expansion of peaceful, nonstrategic trade in East Europe—the fastest growing market in the world. For, aside from the great political damage rendered by such discrimination, the inability to sell goods to us severely limits the amount of goods they can buy from us, and places an unnatural and irrational limit upon trade in peaceful, nonstrategic goods.

I say "unnatural and irrational" because the discrimination against imports from the East European countries makes neither economic nor political sense.

The denial of most favored nation in no way contributes to our national security. All goods bound for East Europe must be licensed, and the presence or absence of most favored nation adds absolutely nothing to this protection.

Nor does it have any significant economic effort on the nations of East Europe. The denial of most favored nation status, in fact, keeps nothing from the East Europeans which cannot otherwise find its way there from the West—legally and with full concurrence of our Government. All this denial does is to prevent the East Europeans from earning the necessary dollars with which to become customers of U.S. exports in peaceful, nonstrategic goods. It is one more explanation why in 1969, with some 16 percent of total world trade, the United States enjoyed only 3 percent of the total trade between the East and the West—$249 million out of a total of over $8 billion. In the fastest growing market in the world, we lag behind West Germany, Italy, France, Great Britain, Yugoslavia, India, Egypt, Finland, Japan, Austria, and Sweden.

Nor, should I add, does the denial of most favored nation make sense in terms of the products against which it most discriminates. If we had reason, for example, to raise special tariffs against certain products from the East European countries, then such tariffs should be imposed with some semblance of precision and reason. I do not happen to think that such discriminatory tariffs should be necessary as long as we have basic protection against dumping and foreign export subsidies. But the denial of most favored nation across the board imposes a totally capricious set of discriminatory tariffs upon the products of these nations, unrelated to specific products or to any coherent economic or trade policy.

Mr. Harold Scott, Deputy Assistant Secretary of Commerce for Domestic and International Business and Director of the Bureau of International Commerce recently visited East Europe and had this summary comment to make on the most favored nation problem:

> The lack of MFN treatment to all East European countries except Poland is the most discussed major problem. To a degree, this deterrent while real also is partly psychological. There is a strong feeling among East Europeans that the lack of MFN is a form of punishment. Importers not only pay a higher duty but view such treatment as a symbol of the "unwelcome mat." One of the major purposes of our Mission was an examination, product by product and country by country, of export potential to the United States. Indeed there were many specific product areas where the lack of MFN removed all possibilities. There were, however, many of their products with some U.S. potential, despite the lack of MFN, that had not been aggressively promoted. One can speculate that occasionally the lack of MFN represents a warm security blanket under which Eastern European export enterprises can quite easily hide their lethargy. It is safe and practical to conclude that trade relations will not grow rapidly until the MFN problem is resolved. It is equally sound to conclude that East European countries have specific trade opportunities in the United States today with the existing tariff structure that they are not exploiting to maximum potential. We in Commerce hope o be helpful in this area in the months ahead, for we believe that political awareness of the MFN problem can be heightened by trading actively with consequent agitation by the business community for even broader trade which would result with MFN.

Actually, we do give most favored nation status to two East European countries: Yugoslavia and Poland. We also grant these two nations special treatment in our export control regulations, Yugoslavia being considered as "West Europe" for such regulations, and Poland—along with Romania—being given preferential treatment over all the rest of the East European countries.

What I am proposing today, Mr. President, is that the President of the United States be given authority to negotiate a commercial agreement with Romania, extending most forward nation, to that nation in return for equivalent benefits granted us and in our national interest.

This bill cosponsored by the Senator from Massachusetts (Mr. BROOKE) would grant "most favored nation" status at least to that nation which seems to be, in fact, "most favored" in the eyes of our Government.

In the summer of 1969, after Mr. Nixon concluded his most successful visit to Romania, he and President Nicole Ceausescu issued a joint statement reading:

> The two heads of state devoted particular attention also to the economic relations between their countries. While noting the upward trend which these relations have displayed in recent years they also agreed on the need in the interests of both countries to develop and diversify the economic ties between the United States and Romania. In this connection it was agreed to look for new ways of realizing the potentialities which this important field offers.

In the President's recent foreign policy message he declared:

> There are difficulties, which we recognize, attending close political relations between Eastern European nations and the United States. But within these limits there are opportunities for economic, scientific and technological contact which we are prepared to broaden on the basis of mutual benefits.
>
> Our trade with Romania doubled in 1970. We extended credits for the purchase of agricultural commodities and liberalized certain export controls for her benefit. We expanded educational and cultural exchanges and responded with immediate relief in medical supplies, foodstuffs, and other emergency needs when Romania suffered a disastrous flood in 1970.
>
> Romania and Yugoslavia have indicated by their policies a desire for cordial relations with the United States on the basis of reciprocity. Our relations have continued to improve because the pace and scope is determined in the first instance by them. We are responsive, and other countries in Eastern Europe who desire better relations with us will find us responsive as well. Reconciliation in Europe is in the interest of peace.

Mr. President, surely the foreign policy as well as the economic interests of the United States can be furthered by granting most-favored-nation status to Romania.

In the first three quarters of last year, we exported $46,218,000 to Romania and imported from that nation $10,019,000—for a more than 4.1 trade surplus. Our exports to Romania last year will be at least triple the 1968 figure of $16,680,000—signs of a great growth potential.

Mr. MONDALE. Mr. President, it is obvious, in spite of this growth in trade, that Romania, with precious few dollar holdings and almost no way to earn them in this country, cannot continue to maintain such a deficit in her accounts with the United States.

A country cannot buy if it cannot also sell. And we cannot sell if we do not also buy.

I must point out that most favored nation is not a concession to be given without compensation. The Romanian Trade Act of 1971 does not require the President to grant most favored nation. Rather, it authorizes him to negotiate a commercial agreement—our part of which would be an extension of most favored nation treatment, and Romania's part to be the granting of equivalent commercial benefits to the United States.

Mr. President, I think that enactment of this legislation would be sound economics and sound foreign policy, furthering not only the commercial returns from expanded trade, but the political returns from closer ties to this key nation of East Europe. I ask that the full text of this bill, the Romanian Trade Act of 1971, 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. 1389

A bill to promote the foreign policy and best

interests of the United States by authorizing the President to negotiate a commercial agreement including a provision for Most-Favored-Nation status with Romania

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SEC. 101. This Act may be cited as the "Romanian Trade Act of 1971".

STATEMENT OF PURPOSES

SEC. 102. The purposes of this Act are—

(a) to maintain United States objectives in building a peaceful, democratic world;

(b) to promote constructive relations with Romania and to provide a framework helpful to private United States firms conducting business relations in Romania by instituting regular government-to-government negotiations concerning commercial and other matters of mutual interest; and

(c) to increase peaceful trade and related contacts between the United States and Romania, and as assistance in meeting United States balance-of-payments problems, to expand markets for products of the United States in Romania by creating similar opportunities for the products of Romania to compete in United States markets on a nondiscriminatory basis.

AUTHORITY TO ENTER INTO COMMERCIAL AGREEMENTS

SEC. 103. The President may make commercial agreements with Romania providing Most-Favored-Nation treatment to the products of Romania whenever he determines that such agreements—

(a) will promote the purposes of this Act,

(b) are in the national interest, and

(c) will result in benefits to the United States equivalent to those provided by the agreement to the other party.

BENEFITS TO BE PROVIDED BY COMMERCIAL AGREEMENTS

SEC. 104. The benefits to the United States to be obtained in or in conjunction with a commercial agreement made under this Act may be of the following kind, but need not be restricted thereto:

(a) satisfactory arrangements for the protection of industrial rights and processes;

(b) satisfactory arrangements for the settlement of commercial differences and disputes;

(c) arrangements for establishing or expansion of United States trade and tourist promotion offices, for facilitation of such efforts as the trade promotion activities of United States commercial officers, participation in trade fairs and exhibits, the sending of trade missions, and for facilitation of entry and travel of commercial representatives as necessary.

(d) Most-Favored-Nation treatment with respect to duties or other restrictions on the imports of the products of the United States, and other arrangements that may secure market access and assure fair treatment for products of the United States; or

(e) satisfactory arrangements covering other matters affecting relations between the United States and Romania, and the improvement of consular relations.

EXTENSION OF BENEFITS OF MOST-FAVORED-NATION TREATMENT

SEC. 105. (a) In order to carry out a commercial agreement made under this Act and, notwithstanding the provisions of any other law, the President may by proclamation extend Most-Favored-Nation treatment to the products of Romania.

(b) Any commercial agreement made under this Act shall be deemed a trade agreement for the purposes of title III of the Trade Expansion Act of 1962 (19 U.S.C. 1901 et seq.).

(c) The portion of general headnote 3(e) to the Tariff Schedules of the United States that precedes the list of countries and areas (77A Stat. 11; 70 Stat. 1022) is amended to read as follows:

"(e) PRODUCTS OF CERTAIN COMMUNIST COUNTRIES.—Notwithstanding any of the foregoing provisions of this headnote, the rates of duty shown in column numbered 2 shall apply to products, whether imported directly or indirectly, of the countries and areas that have been specified in section 401 of the Tariff Classification Act of 1962, in sections 231 and 257(e)(2) of the Trade Expansion Act of 1962, or in actions taken by the President thereunder and as to which there is not in effect a proclamation under section 5(a) of the Romanian Trade Act of 1971;".

(d) Nothing in this Act shall be deemed to modify or amend the Export Administration Act of 1969 (50 U.S.C. App. 2401 et seq.) or the Mutual Defense Assistance Control Act of 1951 (22 U.S.C. 1611 et seq.).

REPORTS TO CONGRESS

SEC. 106. The President shall submit to the Congress an annual report on the commercial agreements program instituted under this Act. Such report shall include information regarding negotiations, benefits obtained as a result of commercial agreements, the texts of any such agreements, and other information relating to the program.

United States of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 92d CONGRESS, FIRST SESSION

Vol. 117 WASHINGTON, THURSDAY, APRIL 1, 1971 No. 47—Part II

Senate

By Mr. MONDALE:

S. 1477. A bill to designate the Kettle River, in the State of Mininesota, as a component of the national wild and scenic rivers system. Referred to the Committee on Interior and Insular Affairs.

Mr. MONDALE. Mr. President, the Departments of Agriculture and Interior released on March 29, 1970, and criteria for the selection and recreational rivers to be added to the national wild and scenic rivers system.

The guidelines adopted by the Secretaries of the two Departments supplement policies set forth in the National Wild and Scenic Rivers Act of 1968, Public Law 90–542, to preserve and protect outstanding freeflowing rivers and immediate adjacent lands. The wild rivers guidelines read:

> To provide river-related outdoor recreation opportunities in a closely-adjacent primitive setting. Land access generally is restricted to trails or infrequent roads, and restricted to trails or infrequent roads, and public use and other resource management facilities must harmonize with their surroundings.

As I reviewed these guidelines, I became impressed that the Kettle River, one of Minnesota's fine untouched and beautiful rivers, meets the criteria for the wild rivers classification.

I am, therefore, reintroducing legislation to designate the Kettle River, in the State of Minnesota, as a component of the national wild and scenic rivers system. Community involvement will be sought in considering this legislation. Interested citizens and the surrounding towns should be consulted on the nature of any program affecting the Kettle River.

Congressman BLATNIK introduced a companion bill in the House last May when I first introduced this measure, and he is reintroducing his bill today.

The Kettle River is located in east-central Minnesota. In a State which is becoming increasingly urbanized, the Kettle Basin is roughly 60 to 75 miles from the Twin Cities and about 50 miles from Duluth. It lies between two major metropolitan areas which generate increasing demand for access to water and outdoor recreation—trails, canoeing, and fishing.

Thus, more than half of the population of Minnesota—over 2 million people—could reach this fine wild, scenic, and recreational river by an hour's drive over a good interstate highway.

During the 1960's, the Minnesota Department of Conservation authorized the Kettle as a canoe route. This designation tells much of the potential of the Kettle for river-related outdoor recreational opportunities in a primitive setting.

The Kettle River is a fascinatingly wild and picturesque river. The constantly changing topography and forest cover provide an ever-changing scene. The river has rapids interspaced with long pools, providing a challenge, as well as a chance for relaxation and quiet reflection, to its visitors.

The glacial geology of the area, as reflected in the river, is also a point of interest. Moraines, glacial outwash plains, gorges, kettle holes, and caves exist along the river, primarily the result of glacial activity.

The area is rich in history. Remains of the lumbering activity of the 1850's and 1860's; quarrying at Banning and Sandstone; forest fires and the birth of St. Croix State Park add great historical interest to the river corridor.

Wide varities of wildlife roam the river corridor. Deer, beavers, muskrats, herons, and hawks all make their homes within the river basin.

Fishing is excellent, especially for walleyes, sturgeon, and small mouth bass. Northern pike, red horse, suckers, and even trout, mainly in the Pine River and Willow River tributaries, are also fished in the river.

The Kettle River has its headwaters in Carlton County and flows in a generally north to south direction, passing through Pine County and into the St. Croix River some 53 miles away. It flows through and over several types of surface and subsurface geology.

The Kettle basin is largely in the central and northern part of Pine County, but headwaters are partly in Carlton County and to a lesser degree in Aitkin and Kanabec Counties. There are some farms, but roughly two-thirds of the basin is forested. Pine County, in 1964, included nearly 2,000 farms, predominantly in the southern part, outside the Kettle basin. Forest industries are important, but there is no national forest.

In addition to the St. Croix State Park near the mouth of the river, Banning State Park, a tract of about 2,700 acres, near Sandstone, was added in 1963. One or more of these parks provide access to the Kettle.

By nature it is an excellent recreation area, not yet overdeveloped. Pine County, in the mid-1960's, contained five hotels, six motels, and 19 resorts. The area is thinly populated and has not begun to reach its recreational potential.

There are 17 homes located along the river's edge, although only five may be seen from the river. Two of the five are old farmsteads while the remainder are homes which have penetrated the wilderness setting. Fourteen bridges and two trestles cross the river.

There are developed access points at miles 21, 33, 40.5, and 47; however, access is also possible at other bridge crossings. There are no developed campsites on the Kettle River.

Approximately 26 miles of the Kettle River are already in public ownership of one form or another. The Gen. C. C. Andrews State Forest abuts on the east side it the river from mile 13 to mile 15.2. The undeveloped Banning State Park abuts both sides of the river from mile 24.2 to mile 30.8. The Sandstone Game Refuge abuts the east side of the river from mile 31.5 to mile 40.5.

Chengwantan State Forest and St. Croix State Park abut the river from mile 42.6 to mile 51. Other stretches of the river are within the municipalities of Kettle River, Rutledge, and Sandstone. Finally, the State and county own small parcels of and on the river which have not been declared parks, game refuges et cetera.

This description can hardly touch upon the actual beauty of the Kettle. It is a truly magnificent river which deserves the protection of the wild rivers system.

United States of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 92d CONGRESS, FIRST SESSION

Vol. 117 WASHINGTON, MONDAY, APRIL 5, 1971 No. 48

Senate

By Mr. MONDALE:

S. 1508. A bill to amend the Wild and Scenic Rivers Act by designating a certain river in the State of Minnesota as a potential addition to the national wild and scenic rivers system. Referred to the Committee on Interior and Insular Affairs.

Mr. MONDALE. Mr. President, we have regrettably slow to protect the natural state of our great rivers.

The degradation of our rivers has been a national disgrace. To drink from any sizable river in the United States is foolhardy, and a safe, clean swim in a river is a memory from distant youth. Boating on major streams is often a cruise through trash heaps, many of them publicly maintained.

We have seen river pollution burn on the water's surface. We have erected dams and impoundments which have forever flooded irreplaceable natural wonders like Glen Canyon. In the name of developments we have bulldozed the banks of some of our greatest scenic rivers.

The National Wild and Scenic Rivers Act, Public Law 90–542, protects some of our most valuable natural treasures, our rivers, specifically those which possess outstanding geologic, scenic, historic, or wildlife values.

The act is designed to preserve these rivers "in free-flowing condition, that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations." The Congress declares in the act that the established national policy of dam and other waterway construction ought to be complemented by a policy preserving and protecting rivers wherever possible.

Having reviewed the guidelines established by the Secretaries of Interior and Agriculture for inclusions in the wild and scenic system, I am aware that Minnesota is fortunate enough to contain several such rivers.

At the same time, Minnesota includes and adjoins population centers of the North Central States area; preservation of wild and scenic rivers in this area insures that millions of our people will have access to waters preserved in their free-flowing, natural state.

One of the most impressive rivers in Minnesota which meets the wild and scenic guidelines is the Big Fork River, in the north-central section of our State.

In 1966, the Minnesota Department of Conservation recommended the Big Fork for inclusion in a State recreational river system.

The Big Fork was given the first priority over all other Minnesota rivers in wilderness classification, and was also given the No. 1 designation as a State canoe river. I believe that this magnificent river ought to be included in the national wild and scenic rivers system, and I am today introducing legislation to accomplish that objective.

The Big Fork River watershed unit has a total area of 2,063 square miles and is roughly 75 miles from south to north, with an average width of about 30 miles. The main stream follows a widely curving course to the north to its junction with Rainy River. The largest falls in the river, with a drop of 35 feet, are to be found at Big Falls.

The river starts at Dora Lake in the sandy outwash plain of the lake region in west central Itasca County. The river flows in a wide channel from this plain along the southeasterly edge of a glacial till area, through the Chippewa National Forest, an excellent recreation area. The river water is clean and clear, and the bottom is a mixture of sand and gravel, with a large amount of plant growth in the water. Rock outcroppings left by glaciers are visible in the river and offer numerous navigable rapids.

In general, no spot on the American Continent is better endowed with natural growth than the Big Fork Valley. Heavy stands of sugar maple cover the ridges in the Bowstring area. Fields of wild rice are found on the upper reaches of the stream. Fur-bearing animals abound, with beaver on every tributary. Waterfowl are abundant during their migrations, and moose graze in the shallows and marshes. Heavy stands of pine line much of the stream from source to mouth.

The exact time that a canoe first rode the waters of the Big Fork is not known, but no doubt the native Chippewa Indians with their birchbark craft used the stream and its tributaries as a means of transportation long before the white man made his appearance some 200 years ago. In keeping with these historical aspects, the Big Fork River canoe trail starts at Inger with its nearby Indian village. Further down are several Chippewa colonies where the descendents of the Red Man still live. Here, during the wild rice harvest, the Indians still use the same campgrounds and gather the cereal by the same primitive methods as did their ancestors of centuries past. On the west bank of the river, where the Popple joins the Big Fork, a historical plaque marks the site of what is believed to be the first wild rice processing mill in Minnesota. At Big Falls, Indians gathered on the rocky ledges to make their arrowheads. It was near the falls too, that Dan Campbell, the first white settler, squatted in 1877.

Where the Sturgeon River joins the Big Fork, east of Big Falls, a Hudson Bay trading post once stood. It is also the site of an old Indian campground and many artifacts may be found here. This is the ancient water route, via the Sturgeon and Tamarack Rivers to Red Lake—traveled by Indians of many years ago. Another Hudson Bay trading post was located near Keuffner's Landing further north of Big Falls.

At the mouth of the Big Fork, on the east bank, ancient burial grounds are to be found. These are under investigation at the present time by archaeologists and the area is being considered as a site for Grand Mounds State Park.

With the railroad reaching Kenora, Ontario, in 1879, the Big Fork River and its tributaries for the next 30 years carried millions upon millions of feet of pine logs to the mills at Kenora and later to Spooner and Baudette. In a single season, as high as 100 million feet of timber floated down the stream into Rainy River on its way to the various mills.

The Big Fork represents a frontier past and, for the most part, the area is still a sparsely settled wilderness. Practically every species of wildlife that existed 200 years ago can still be seen. Resting a paddle for a moment's reflection, one realizes that he has traveled the same route in the same manner as did the Indians, the fur traders, the loggers and the frontier settlers.

I urge prompt inclusion of this great river in the national wild and scenic river system.

United States of America

Congressional Record

PROCEEDINGS AND DEBATES OF THE 92d CONGRESS, FIRST SESSION

Vol. 117 WASHINGTON, THURSDAY, APRIL 29, 1971 No. 61

Senate

By Mr. MONDALE:

S. 1724. A bill to expand the home improvement loan program under sections 203(k) and 220(h) of the National Housing Act to include interest subsidy payments on behalf of the owners of modest homes, in order to preserve and restore the residential character of neighborhoods in cities, villages, and towns. Referred to the Committee on Banking, Housing, and Urban Affairs.

Mr. MONDALE. Mr. President, today I am introducing the 1971 Home Rehabilitation Act which will amend sections of the National Housing Act to include interest subsidy payments on behalf of owners of modest homes who make major improvements. This bill, which provides a long-awaited and much-needed expansion of the home improvement loan program, will help to preserve and restore the residential character of neighborhoods in cities, villages, and towns. The intent of the act is to provide for the rehabilitation of some 500,000 homes, each year, for the next 10 years.

I feel that the importance of this act, and its potential impact on the rehabilitation of our Nation's homes, can hardly be overstated. It will help to eliminate much of the redtape which has so often discouraged people from making home improvements, and it will encourage home rehabilitation and make it financially feasible for most homeowners. This legislation will help protect against the deterioration and evacuation of homes in all parts of our cities and towns.

There is a need for this new legislation because the present property improvement loan programs are inadequate. Under the title I program, the maximum loan available is only $5,000 and longest term is 7 years. When you couple the high interest rates of the last few years with the short repayment period it is easy to see why these payments are too high especially if the homeowner is also paying on a first mortgage.

There is also the 203(k) and the 220(h) programs that make loan insurance for major home improvements available at an interest rate that is set by the Secretary of the Department of Housing and Urban Development. Even though these loans have a 20-year repayment possibility and a $12,000 maximum, there is still a problem with the high interest rate that must be charged in order to attract money to this program. The bill that I am introducing today will amend these two programs so that an interest subsidy is provided for interest above 5½ percent plus the ½ percent insurance fee.

This legislation will provide that the subsidy to the financial institution be the difference between 5½ percent and the maximum rate of interest established by the Federal Housing Administration for other FHA insured mortgages plus three-eights of 1 percent. The three-eights of 1 percent is to be paid to the mortgagee instead of discount points and in fact, points that are not directly related to the closing costs will be prohibited under this program. The mortgagor will also be required to pay the customary one-half of 1 percent insurance fee and thus the net result will be a 6 percent home improvement loan with a 20-year repayment period if the economic life of the property justifies it. The maximum loan available for single family dwelling will be $15,000.

Loans can go to any person, regardless of income, so long as the house being improved is the primary residence, and the value of the home after rehabilitation does not exceed $30,000, in the case of a one-family dwelling. In addition the legislation provides that the homeowners may include essential applianoes—such as stove, refrigerator, washer, dryer, carpet, and so forth in the initial loan. Rather than being forced to go to the store and buy these items at an 18 percent interest rate, persons can include such items in rehabilitation costs at the 6 percent rate of interest.

If the completed property is to exceed $30,000 in value this program can still be used but without the interest subsidy feature. In other words the mortgagor would have to pay the market rate of interest but the mortgage would still be insured by FHA and available for up to 20 years.

Mr. President, today our Nation's housing program has reached a critical stage. We must take every opportunity to check and reverse the exodus from our cities which leaves them to the fate of decay and deterioration. The 1971 Home Rehabilitation Act will make more people eligible for loans at lower rates of interest and with a longer repayment period. This bill will play an important part in our efforts to rehabilitate and improve these areas which are now reasonably stable, from becoming the waste and renewal areas of tomorrow.

Mr. President, I, therefore, submit the 1971 Home Rehabilitation Act, and respectfully request that my colleagues will give it every consideration and their support. I ask unanimous consent that the bill be printed in the RECORD at this point.

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

S. 1724

A bill to expand the home improvement loan program under sections 203(k) and 220(h) of the National Housing Act to include interest subsidy payments on behalf of the owners of modest homes, in order to preserve and restore the residential character of neighborhoods in cities, villages, and towns

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 220(h) of the National Housing Act is amended—

(1) by inserting before the semicolon in subparagraph (1)(B) the following: ", and includes the provision of necessary fixtures and equipment approved by the Secretary";

(2) by striking out "$12,000" in subparagraph (2)(1) and inserting "$15,000" in lieu thereof;

(3) by striking out "three-quarters of" in subparagraph (2)(iv);

(4) by inserting after paragraph (3) a new paragraph as follows:

"(4) The security for any home improvement loan insured under this subsection may include a second mortgage in any case where there is outstanding a first mortgage on the property to be improved."; and

(5) by adding at the end thereof a new paragraph as follows:

"(12)(A) The Secretary is authorized to make, and contract to make, interest subsidy payments to the holder of any home improvement loan insured after the date of enactment of this paragraph under this subsection, if—

"(i) the loan is made to an individual or family (hereinafter referred to as the 'borrower') to effect improvements in a one- to four-family dwelling in which the borrower has his principal residence; and

"(ii) the estimated value of the property, as determined by the Secretary, after the proposed improvements are made will not exceed $30,000 in the case of a property upon which there is situated a one-family dwelling; $40,000 in the case of a two-family dwelling; $52,500 in the case of a three-family dwelling; or $60,000 in the case of a four-family dwelling.

"(B) Interest subsidy payments under this paragraph (12) shall be equal to an amount representing the difference between the amount which the borrower would be required to pay on his home improvement loan if the loan bore interest at the rate in effect for such loan, plus three-eighths of 1 per centum per annum, and the amount which the borrower would be required to pay on such loan if the interest rate applicable thereto was 5½ per centum per annum.

"(C) The Secretary shall condition the making of interest subsidy payments with respect to any home improvement loan upon the submission of proof satisfactory to him that no charges or discounts in the nature of points have been demanded or received in connection with the making of such loan."

SEC. 2. Section 203(k) of the National Housing Act is amended—

(1) by inserting "(1)" after "(k)"; and

(2) by adding at the end thereof a new paragraph as follows:

"(2) The Secretary is further authorized to make, and contract to make, interest subsidy payments to the holder of any home improvement loan insured after the date of enactment of this paragraph under this subsection in accordance with the provisions of paragraph (12) of section 220(h)."

SEC. 3. There are authorized to be appropriated such sums as may be necessary to enable the Secretary of Housing and Urban Development to make interest subsidy payments under contracts entered into under sections 203(k)(2) and 220(h)(12) of the National Housing Act. The aggregate amount of contracts to make such payments shall not exceed amounts approved in appropriation Acts, and payments pursuant to such contracts shall not exceed $60,000,000 during the first year of such contracts prior to July 1, 1972, which amount shall be increased by an additional $60,000,000 during the first year of an additional number of such contracts on July 1 of each of the years 1972 and 1973.

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