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Speeches delivered at
the prize-giving ceremony

18. Mai 1976



Lorenz E. Zimmerman, M.D. · Donald A. Henderson, M.D.

THE PRIZE

On May 18, 1976, the Jung Foundation for Science and Research presented for the first time the Ernst-Jung-Prize for Medicine to the amount of 300,000,-.

This prize is named after the donor of the foundation, the merchant Ernst Jung, senator of honour of the University of Hamburg. On his eightieth birthday the donor's life-work was to be crowned with the first presentation of the prize. On January 8, 1976, his death set an end to the project. Unfortunately having no children, Ernst Jung ten years ago invested large parts of his fortune in foundations. The heritable foundations of the old peoples' homes in Hamburg and Stade – Ernst and Claere Jung-Foundations – were soon followed by the establishment of the Jung-Foundation for Science and Research and, after the death of his wife in December 1973, the establishment of the Claere Jung-Foundation which predominantly serves the blind welfare. Through his unselfish foundations the name of Jung shall continue to live.

The first prize-winners are the scientists Dr. Donald A. Henderson, Geneva, and Dr. Lorenz E. Zimmerman, Washington, D. C.

Henderson received the prize of 150,000,- for the results of his pioneering work in the field of public health care as well as for the future control of possible cases of smallpox on a world-wide basis.

Zimmerman received a prize to the same amount for his trend-setting works on the nature of eye disorders as well as for the future theoretical and clinical research that shall make it possible to save the eyes of many people and to restore their sight.

Since its establishment in 1976, the Jung-Foundation for Science and Research has aided medical, theological, and philosophical research projects – mainly at the University of Hamburg. Since the alteration of its statute in 1975 the foundation has been supporting human medicine in particular.

SALUTATION

Dipl.-Ing. ERHARD KELTSCH
Chairman of the Board of Trustees of the Jung-Foundation
for Science and Research

My Lord Mayor, honoured prize-winners, esteemed guests, Originally, the donor of the Ernst Jung Prize for Medicine – a prize being presented today for the first time – was to welcome you now. Regrettably, Herr Jung passed away on the 8th of January this year. He did not live to celebrate his 80th birthday, which would also have been today. We who knew him have gratefully honoured his memory with the introductory bars of the Brandenburg Concerto.

What would Herr Jung have said about the reasons and intentions which he linked with the donation of this prize?

Now we are left to come to our own conclusions, aided by one or the other earlier remark made on this topic.

He came to Hamburg as a young man and soon set up for himself a business based on oil which had reached an impressive economic level by the end of the twenties. His business connections with the USA and several Latin-American countries were of great importance. He believed in technical and economic progress, became enthusiastic about the zeppelin, for instance, and flew to the USA in it without hesitation.

Unfortunately he had no children. He also had nobody to whom he could or would have entrusted the business as a living unit. He saw the limits set by age to his personal involvement. The man who had been untiringly active in the business world now discovered other areas of life which had remained foreign to him for a long time, simply because of a lack of time.

He became interested in theological and religious questions, in classical music, and he attended intellectually demanding lectures which interested, even captivated him as a non-scientist.

The long suffering of his wife and later his own illness brought him to think about the obligation of those with capital – for instance, in the care of aged people and in aid for scientific research serving mankind in the field of medicine.

Finally he believed that success-oriented business sense, together with enough money, must lead relatively quickly to tangible results for mankind in the field of science. Here he was often plagued by impatience. There were, however, also periods of general hesitant uncertainty. He felt deep sympathy for helpless and suffering people, particularly when he gained a personal picture of an individual case.

It could well be this that provided him with the idea for his foundation – an idea which, with the help of advice from good friends, has finally become a reality.

Herr Jung withdrew from active business systematically and with remarkable skill gradually over a period of many years. He

removed his fortune from the risks of business ventures, and secured it as well as permitted by the endowments for his chosen causes.

What is remarkable is that Herr Jung made these endowments while still living, and that he could realize most of his plans himself. Particularly impressive are the old peoples' homes in Hamburg-Othmarschen and Stade. They have the unchallenged reputation of being exemplary, and were given the particular affection and unselfish commitment of Cleare and Ernst Jung in their planning and establishment. Brief reference should also be made to the Cleare Jung Foundation as an establishment for the blind.

Today we are concerned with the Foundation for Science and Research, of whose executive board I have the honour to be chairman.

Ladies and gentlemen, we have been born into a world which is being changed more rapidly than ever before by the power of man himself. At the same time, our understanding of what life is has grown. We are learning more all the time about the functions of living organisms and the peculiarities which distinguish man in nature. Science and the practical use of this knowledge have caused processes of growth in almost all fields as a result of mutual stimulation – for instance, in population density, energy consumption and production potential. Almost every column of figures plotted over a period of time is on the rise and often takes the form of an exponential curve. The attempt has been made for several years to demonstrate the limits of growth. Here the group of those who would limit growth is arguing more strongly all the time against the view that growth contains progress. Is this an expression of our democratic liberal understanding or the beginning of a radical new change of opinion? We do not yet know where the main weight will actually lie and which way the scales will finally tip.

Whereas both general public and press formerly applauded traditional science and research without reservation, there is now a more negatively oriented campaign against this kind of science, which reached a visible climax with the manned moon-landing.

All progress, whether in technology or medicine, is almost always accompanied by relatively small disadvantages. The conservative scientist is at the moment dismayed about the fact that the disadvantages of his work and results are described and criticized in more detail than the success, which must be judged as being largely positive.

A new type of scientist is criticizing the conservative opinion on environment, technology, genetics and health – and although there are only a few of them, they come from all levels of society and have a strong sense of personal involvement. It seems to me that the mass media of the Western countries are giving these trains of thought too much attention at the moment and are making a certain proportion of the population feel insecure. We can only hope that, within the bounds of all necessary criticism, the quiet

researcher can continue to do his work free from external pressure and according to his own moral principles.

Great discoveries are not, as a rule, the result of very long thought or research processes which have predetermined goals from the very beginning. They also need what Ernst Jung had – intuition and the right feeling for things. This kind of success cannot simply be planned by the establishment. This is why, in my opinion, private initiative and not only research directed by the state is justified and even necessary.

May this foundation be successful in finding an appropriate role in society and in furthering research projects which greatly serve mankind. In the past one said "Live and let live". Today one should say "Live and help to live".

At the last meeting of the board of the Ernst Jung Foundation for Science and Research on 15th November, 1975, a meeting which Herr Jung also attended, it was suggested that the 1976 Prize be presented to

Dr. Donald A. Henderson,
World Health Organization, Geneva
and
Mr. Lorenz E. Zimmerman
Armed Forces Institute of Pathology,
Washington, D.C.

The governing board accepted this suggestion at its meeting on the 4th of December, 1975, with Herr Jung again present. I now have the honour and pleasure of presenting these worthy gentlemen with the prize. It carries an endowment of 150,000 marks in each case, which gives the promise of visible success in future work.

The governing board would like to thank all those here today for their interest in the work of Ernst Jung. May a small medallion remind you of this day – the first presentation of the Ernst Jung Prize for Medicine. Remain faithful to Ernst Jung and his Foundation for Science and Research. We would like to maintain this society and win new friends.

I now call upon His Worship the Mayor, Herr Biallas, Director of the Department of Arts and Science in Hamburg, to speak to us.

LAUDATIO

Prof. Dr. OTTO WESTPHAL, M.D. to
Dr. DONALD A. HENDERSON, Geneva

A hundred years ago the first ever professorial chair for hygiene and microbiology was set up in the German Empire – in Berlin, and Robert Koch became the institute's first principal. In 1888, after occupying this position for over ten years, Koch gave a lecture on the combatting of infectious diseases. He began his lecture by stressing the importance of promptly recognizing the first cases of a disease. Then he went on: "Initial cases of a disease are like isolated sparks falling onto a thatched roof. Such a spark can be extinguished almost effortlessly, whereas a blazing fire soon defies any attempt at combat. This is precisely the way in which future methods of combatting contagious diseases shall differ vastly from methods used in the past. In the past, vigorous steps were not as a rule taken until the devastation caused by the disease, and the prospect of further damage to come, made these steps absolutely necessary. No particular importance was attached to the combatting of an infectious disease in its infancy because it was basically assumed that the disease had not been contracted elsewhere, but was – on the contrary – an autochthonous occurrence, and that to take steps against isolated cases would therefore be ineffectual. Nowadays we take the opposite view and assume that diseases which are not otherwise endemic in the places where they break out can only have been brought in from elsewhere. In view of the fact that the first cases of a disease – provided they are isolated cases – can be supervised and treated relatively easily and in such a way as to render the infectious matter innocuous, every effort must be made to kill off the disease in these initial stages, before the task is made more and more difficult by an ever-increasing number of cases."

In his very simple and clear analysis, Koch underlined the importance – based to a large extent on his war-time experiences – of preventive measures, particularly hygiene and, the ultimate goal: universal vaccination. In the latter connection, he mentions smallpox as being the kind of disease to which universal vaccination could be most successfully applied. He concludes by quoting Frederick II, who had asserted: "It is not merely a matter of the right medicine, but of all the other provisions and arrangements one makes to protect people from infectious diseases."

This year – 1976 – the World Health Organization (WHO) in Geneva is able to announce the world-wide eradication of the smallpox virus – the cause of one of the most devastating infectious diseases ever to have afflicted man. It is estimated that one person in ten died of smallpox at one time. The event is being celebrated all over the world as one of the greatest triumphs in medical history.

In 1967, the WHO resolved to undertake a massive campaign against the disease, which was at that time endemic in many countries and constantly spread from these countries to others. Although there had been no further trace of the disease in Europe or North America, thanks mainly to mass vaccination and the general standard of hygiene in these countries, there were approximately two and a half million cases of the disease every year in Brazil and in vast areas of Africa and Asia. The WHO's smallpox campaign, however, based on the systematic vaccination of many millions of people, the setting up of regional vaccine production laboratories and strict supervision of the vaccine's effects, not to mention improved methods of detecting and supervising cases of the disease, has been the most successful campaign of its kind.

The credit for this success is due primarily to one man: Dr. Donald A. Henderson – in charge of the WHO's smallpox campaign since 1966 – to his effort and perseverance and his years of experience in the fields of science, psychology and medicine.

Henderson, born in Lakewood/Ohio in 1928, studied medicine, and worked for one year in Internal Medicine before being appointed Assistant Head of the Supervision Section of the Communicable Disease Center at America's Public Health Authority Headquarters in Atlanta in 1955. A year later he was promoted to Head of the Center. At that time, attention was focussed on the supervision of the first campaign against infantile paralysis using Salk vaccine, and on the investigation of the causes of the more serious effects of vaccination by close examination of the industrial manufacture of vaccine. Henderson was involved in the planning of a control campaign for poliomyelitis, based for the first time on the collection of extensive day-to-day information. Here, he soon realized how vitally important the control of a disease on a nationwide scale was for the collection of the kind of data which enable public health authorities to make important decisions quickly and intelligently. The polio problem was solved and the experience gained applied to other infectious diseases. Large-scale investigations followed – investigations into new oral vaccines to combat infantile paralysis, investigations into more effective vaccines for measles, influenza, diphtheria, tetanus and smallpox. Methods of mass vaccination were also improved – e. g. by the testing and introduction of the "jet injector". The new methods proved particularly successful when lesser trained staff were engaged to conduct field tests.

Henderson gradually built up an entire network of research institutions and epidemiological establishments, and this organization was soon making important discoveries about the courses which diseases take and the manner in which they spread – discoveries which were of immense importance for the checking of these diseases. In 1962, Henderson received the Public Health Service's medal of recognition. From 1961 he had also applied himself to the task of promptly documenting and distributing weekly disease statistics. Under his management, the invaluable periodical, "Mor-

bidity and Mortality – Weekly Report”, well-known today in the USA, increased its sales from 5,000 to ten times that figure by 1964 – an achievement which earned him the Superior Service Award in 1964.

When Henderson was asked by the US Government in 1965 to assist in a measles vaccination campaign in 9 different countries in West and Central Africa, he suggested organizing simultaneously a campaign to eradicate smallpox within a block of 20 West African countries, in which the measles vaccine could be included as an additional effectiveness control. US President Johnson decided in favour of the project and Henderson was entrusted with its leadership. When, in Geneva that same year, the WHO decided to undertake a campaign to eradicate smallpox on a world-wide scale, it was only natural that Dr. Henderson should be summoned to Geneva to take charge of this large and responsible project under the auspices of the UN. His ten years experience made him particularly suitable for this task.

It was quite clear that individual campaigns would concentrate largely on man himself as the carrier of the smallpox virus and that mass vaccination with a powerful vaccine could be administered very effectively. Indeed, between 1965 and 1967, smallpox was eradicated by this method in the Phillipines and in a few countries in Central America. A systematic campaign for mass vaccination – organized by Henderson in conjunction with local health services – was conducted in India and Pakistan over a period of 2 to 3 years as a model for campaign strategy generally. The initial aim of the campaign was to reduce the number of smallpox cases to less than 5 cases per 100,000 of the population. The campaign was a success but was often seriously threatened by periodic outbreaks of civil unrest, by the devastation caused by flooding, by starvation, war hostilities, by the breakdown of transport services and not least of all by the unreliability of staff and occasional strikes. Henderson himself said recently: “Despite all these problems, there was always a remarkably large number of staff at national and international level who time and again restored the system of vaccination and control, adjusted to circumstances and found solutions to unbelievable problems.”

Having systematically reduced the number of cases of the disease to a few cases capable of constant control and supervision, the second stage of the project could begin. It became apparent that persons who had once been vaccinated were, as a rule, seldom taken ill with smallpox. The new techniques in vaccination enabled the dose to be reduced to a quarter of its original amount and consequently provided vaccine for four times as many persons. At the same time, the customary liquid vaccine was substituted for the more stable dry vaccine. At this stage, Henderson was receiving supplies of vaccine – sufficient for 150 million doses a year – from the Soviet Union. Later, 80 % of the required amount of vaccine was able to be produced in the afflicted countries themselves: Kenya, India, Guinea and Brazil became important

producers. Since 1970 the vaccine has complied with all legal requirements.

In 1971, the number of countries with cases of smallpox fell from 43 to 16; by December, the disease was endemic in only 9 of them. Smallpox had in the meantime been eradicated in all African countries except Ethiopia. Only in the subcontinent of Asia had progress been slow. In the words of Henderson, “The support given by health authorities at all levels could hardly be described as enthusiastic”. Indeed, people were again beginning to look upon smallpox as something inevitable . . . It was then that Henderson decided to undertake a meticulously planned – also meticulously planned from a psychological point of view – “house-to-house” campaign in an area of Southern India confined to 2 million inhabitants. Within a matter of weeks, the area was free of smallpox. “None of us had realized until then how many idly employed health workers there were in India, or how quickly these people could be mobilized to help in a planned series of measures”! The essential part of this campaign was the strict prevention of contact between diseased persons and persons who were not vaccinated. In the Spring of 1973 – aided by effective financial support from Sweden via the WHO – this campaign, conducted on the same lines, was extended to the whole of India. Afghanistan was rid of smallpox by 1972; the last case of the disease in Pakistan was recorded in October 1974. In India the last known case was recorded on the 24th of May, 1975, and the event was celebrated with a national holiday the following November. As a result of war and the devastation of flooding, it was not until the beginning of this year that Bangladesh – with the aid of 12,000 public health officials, supervised and supported by approximately one hundred epidemiologists – was finally rid of smallpox by the “house-to-house” method. At the present time, thanks to the aid of local authorities and the use of helicopters etc., the Henderson team has the last 20 or so cases of the disease in a few remote regions of Ethiopia firmly under control. Henderson: “In short, we believe that the ten-year time limit which we were set by the Director General of the WHO in 1966/67, will be kept to”!

On the basis of Henderson’s findings, it is extremely unlikely that there will be any sudden new outbreaks of the disease, because cases which used to occur in any country which had once been rid of the disease could always be diagnosed as having been brought in from elsewhere. The so-called monkey smallpox virus, appears to be different from the human variety and not seriously infectious to man.

So the project has now reached its third stage: the surveillance of all the relevant parts of the earth. – A scientific and organizational as well as a political problem! According to Dr. Henderson, should no further cases of the disease occur within the next two years, there is good scientific reason to regard his mission as having been accomplished. Until then, scientific precision in the analysis

and supervision of many would-be cases of the disease and strict adherence to the newly acquired methods of control are necessary at all costs. And one should think twice before refusing to provide the means necessary for this. The WHO is already considering extending Henderson's findings – which Henderson himself regards as “nothing more than a first step” – to other menacing diseases. The end of the need for compulsory smallpox vaccination means that countries all over the world are now saving enormous sums of money, some of which – it is hoped – will be used to support similar campaigns. Henderson – honoured with the Award for Excellence in Public Health in the USA in 1975 – has shown that support of this kind pays dividends.

An American scientist recently spoke of the two faces of science: science the researcher and discoverer of new territory on the one hand, and – no less important – the science that turns scientific findings and discoveries into practical use for the benefit of mankind on the other. Whereas the Nobel Prize for Medicine gives prior recognition to the pioneer on the research front in the laboratory, the equally valuable Jung Prize gives prior distinction to the pioneer fighting in the immediate environment of menacing diseases – in the clinic or in some far-off corner of the world.

Dr. Henderson is being honoured both as a scientist with character and one with courage. He himself has almost lost count of the number of times his life has been in grave danger during the course of his world-wide campaigns – often in some of the remotest parts of the world.

Officials and scientists at the WHO are obliged not to accept any personal prizes for successful work. The Ernst Jung Prize is, however, not primarily – if at all – awarded for achievements accomplished in the field of medicine, but rather in support of some future work. And it is precisely the tasks that lie ahead which are the concern of Dr. Henderson. The value of this Prize shall afford both him and his colleagues a greater degree of flexibility in the making of future decisions – some of which may have to be made in a hurry.

ACCEPTANCE SPEECH

Dr. DONALD A. HENDERSON

I am deeply grateful to the Ernst Jung Foundation for this exceptionally high honor which you have accorded to me; to the World Health Organization and to the smallpox eradication programme staff – both national and international – from around the world.

The conquest of smallpox is an achievement in which all of us who have been privileged to work with the programme do take great pride. In the immediate sense, it represents mankind's first total conquest of a disease, a disease long described as one of the great pestilences of history. And this victory is imminent. The world's last case of smallpox we hope may be detected within the next few weeks – the last case of a disease which within living memory afflicted every nation on the face of the earth and before Jenner's historic discovery of the first vaccine, killed one in five persons throughout the world and blinded and disfigured countless millions more.

When, in 1966, the World Health Assembly decided that the Organization should undertake an intensified programme to eradicate smallpox, delegates proposed a target of 10 years for achieving this goal – a goal of December 1976. It seemed like a formidable if not impossible undertaking.

In 1967, the year when the programme began, 43 countries reported cases of smallpox and in 30 the disease was endemic – that is, constantly present. That year, 131,000 cases were recorded but it was recognized that many additional cases were occurring but not being notified. Initially, we had estimated that perhaps one case in 20 was being reported but later studies revealed that the true figure was closer to one in 100 cases. Thus, as recently as 1967, an estimated 10 to 15 million persons were afflicted with smallpox each year. Doubt about the feasibility of the programme was encountered everywhere. Indeed there was reason for skepticism since there were included among the smallpox afflicted countries those with the least developed health services and communication systems and the most inhospitable terrain.

But step by step the programme took shape. Until production laboratories could be developed in the affected countries, contributions of vaccine from the Soviet Union and the United States of America and later from more than 20 other countries helped to meet the annual need of more than 250 million doses. New methods for vaccine administration were introduced – the jet injector and the bifurcated needle – which made vaccination simpler and more effective and permitted from two to four times more persons to be vaccinated with the same quantity of vaccine. Most important, the strategy for smallpox control was changed from a costly and difficult campaign of mass vaccination which was intended to reach everyone in a population to a strategy which emphasized the discovery of outbreaks and their elimination.

During the first 6 years of the campaign, progress in many parts of the world met our most hopeful expectations. By 1973, smallpox had been eliminated from South America and Indonesia and all except two countries of Africa. But, even then, few believed that the global eradication of smallpox was more than a dream. For included among the five countries still with endemic smallpox were Pakistan, India and Bangladesh – the subcontinent of Asia embracing a population of some 700 million persons. There, comparatively little progress had been made. The view held by many was that for smallpox, like cholera, Asia was the home of the disease, the “cradle of smallpox”. Few believed it possible that smallpox could be eliminated from such a vast, congested area.

However, in the summer of 1973, building on ideas and proposals of field staff, a new strategy was conceived – a strategy which called for the mobilization of more than 110,000 health workers to search one week each month, village-by-village and house-by-house for cases of smallpox and, once found, to isolate them and to vaccinate all who might come in contact with them. Plans were made, forms designed, literally tens of thousands of training sessions organized and conducted and staggering quantities of manuals, guides and forms printed. Notably, more than 8,000 kilograms of forms were required for a single search in India. Additional financial support granted by WHO and Sweden provided for necessary transport, petrol, per diem of local staff and other needs. The tempo of activity increased and was continued without respite, even during the scorching heat of summer and throughout the monsoon. The results were gratifying. In October 1974 the last case of smallpox occurred in Pakistan; in May 1975 in India; and in October 1975 in Bangladesh. The search for cases has continued and a large reward has been offered to anyone who detects a case. But for more than 7 months, none have been found. Today, the last cases are found in very small, remote highland areas of Ethiopia. After the last known case has occurred, two years of continuing search must elapse before we can be absolutely certain that no hidden outbreaks remain. But, hopefully, sometime in 1978, we will be able to say with certainty that smallpox has been relegated to history. Vaccination everywhere will be able to be stopped. For less than 100 million dollars in international assistance given over a period of 10 years, countries throughout the world will save more than one billion dollars each year. For preventive medicine, this is a notable victory.

But the victory is more than this. It is a tangible expression of how much can be achieved with how little, when there is vision and an international health organization which can act to mobilize resources of material and manpower to achieve a common objective. Non of us who have worked in this programme have failed to be impressed by the number and quality of truly excellent people – both national and international – who, supported in their efforts, have worked tirelessly, enthusiastically and sometimes at great personal risk in some of the most inhospitable

areas of the world. It is to them in particular that credit for this victory really belongs. And no less must credit go to agencies and governments throughout the world who, even during the darkest hours of the programme – and there were many – have supported the campaign with a faith and confidence that regenerated our own commitment and belief that the goal could be achieved.

At a time when there is doubt and concern as to the value of international organizations, this programme, I believe, provides reaffirmation of the belief that nations and individuals from around the world are capable of rational planning and harmonious collaboration in achieving objectives such as smallpox eradication which itself was deemed utopian only 10 years ago.

Our challenge now is threefold – first, to complete the task of eradication; second, to document clearly the history of the programme and the techniques employed so that the principles might be extended to other programmes and to other more complex activities; and, third, to continue to foster the spirit of international collaboration and goodwill which has matured.

The task is neither easy nor is it subject to instant miracles, but with the recognition and support provided by the Jung Foundation, I am confident that we can broaden our horizons to encompass a far more intensive international assault on other disease problems with a breadth of vision so well exemplified by Mr. Ernst Jung himself.