First Inter-American Conference on Congenital Defects

Papers and Discussions Presented at the First Inter-American Conference on Congenital Defects, Los Angeles, California, January 22-24, 1962

COMPILED AND EDITED FOR

THE INTERNATIONAL MEDICAL CONGRESS, LTD.

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J. B. LIPPINCOTT COMPANY

Philadelphia and Montreal

Dedication

When the beginnings of the end of poliomyelitis became apparent, due to the fundamental discoveries made under the sponsorship of The National Foundation for Infantile Paralysis, the president of the Foundation, its board and its scientific advisors conferred on new fields of human disease and suffering to be conquered. The decision was made to devote the funds which the people have contributed and the time and the energy of the scientists who cooperate to the increasingly important problem of defects of birth. These are called, scientifically, congenital defects. An International Congress on Congenital Defects was held in London and was attended by many representatives of many nations. Then the decision was made to hold an inter-American conference on congenital defects. The first such conference was held in Los Angeles, Calif., from January 22 to 24, 1962, under the joint sponsorship of the International Medical Congress, Ltd., The National Foundation and the University of Southern California.

As President of the International Medical Congress, Ltd., I take both pride and pleasure in dedicating this volume of the proceedings of the conference to the hundreds of thousands of children born in the United States with such defects of the blood as sickle cell anemia; to such defects of structure as spina bifida and hydrocephalus; to such constitutional disorders as fibrocystic disease; to such fearsome conditions as mongolism and other forms of mental retardation. The field of congenital defects is broad, and the approach to the solution of its problems encompasses every phase of basic research in medicine and in its practice. Fortunately, the great scientists who are leaders in these sciences throughout the American continent have joined together to make the First Inter-American Conference on Congenital Defects one of enlightenment and inspiration. To them, I give my thanks, and to them, also, this book is dedicated.

BASIL O'CONNOR

Preface

The First Inter-American Conference on Congenital Defects was unique in many ways besides being the first of its kind. It was sponsored by a great university and a great philanthropic agency. It enlisted the interest of some of the investigators in various fields of the medical sciences who have achieved distinction in research on congenital defects. It afforded opportunity in the auditorium of the Los Angeles County Hospital to demonstrate actual cases of the types discussed, the parents of children with congenital defects cooperating by bringing the children to these sessions and permitting them to be used as subjects for teaching. During the session the Research Study Club of Los Angeles, which is especially concerned with congenital anomalies of the eye, participated. Thus the Conference had the cooperation of leading medical organizations, research institutes and universities. These proceedings are published to make available the latest information brought forth to medical schools, medical libraries, research institutes and agencies for teaching, not only in the Americas but throughout the world.

The complete interchange of medical information intensifies the rate of progress and saves vast amounts of time, effort and money through avoiding duplication of work. Moreover, such publications stimulate the development of new ideas and further research. The history of medicine indicates that at least two of the greatest discoveries of all time resulted from a stimulus that came first from reading. Sir Frederick Banting got the idea which led to the discovery of insulin while reading an article by Dr. Moses Barron of Minneapolis in a periodical called *Surgery, Gynecology and Obstetrics*. Dr. Howard Florey developed the idea for the production of penicillin as a fundamental product in the control of infections while reading an article written ten years previously by Alexander Fleming in a highly technical scientific journal on bacteriology. If there were no other reasons for carefully recording and publishing the proceedings of conferences such as the First Inter-American Conference on Congenital Defects, these examples would suffice.

The editor and the publishers extend their thanks to all the contributors and to the educational institutions and the medical groups which collaborated in making possible prompt publication of these proceedings.

MORRIS FISHBEIN, M.D.
Chairman, Committee on Publications,
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MONDAY MORNING, JANUARY 22, 1962

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President, University of Southern California

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TOWARD A HEALTHIER HERITAGE

MR. BASIL O'CONNOR, A.B., LL.B.
President, The National Foundation, 800 Second Avenue, New York 17, N.Y.

Opening Address

NORMAN TOPPING, M.D.

It is a great pleasure to welcome you to Los Angeles and to this most significant conference on congenital malformations. I know that a great many ladies and gentlemen here are highly distinguished in the sciences and in the medical profession. Moreover, each of you is distinguished by your humanitarian concern and by your contributions toward a healthier life for man—particularly toward a healthier beginning for this life.

I am confident that you will find the papers presented and the discussions held during this and the next few days to be intellectually stimulating and most rewarding in your work.

As you know, one of the Conference sponsors is the University of Southern California. As its president, I must admit hoping some one of you will present a paper refuting an unfortunately common theory about private university administrators. Our need to raise funds is *not* a congenital defect. Fund-raising is just a simple custom, and I'm quite happy to abandon it for the duration of the Conference. Of course, I speak for myself and not for other University personnel seated strategically among you.

The co-sponsor of this conference is the National Foundation, one of the many outstanding voluntary health agencies in the United States. I would like you to consider with me the notable achievements of some representative voluntary health agencies and how they relate to this function of the International Medical Congress. The National Foundation and its sister agencies are serving the same humanitarian purpose which unites us here.

The many contributions of all our voluntary health agencies to the steady advance of medical science would be measured best in terms of human life spared from crippling disease and from early death. Against this measure, the contributions of the voluntary health agencies stand lofty and inspiring—a tribute to the benevolence of resourceful men and the dedication of able scientists.

The list of accomplishments is long, and I would like to cite just a few.

Tuberculosis was once a widespread menace to the people of the United States, but it has been attacked and forced into a steady retreat. This attack has been led by the National Tuberculosis Association through its many programs supporting research and public education.

Cancer and heart disease once were regarded by the public through a dark veil of ignorance and fear. Yet today these afflictions are seen with clarity and hope in the light of productive research, beneficial treatment and a general publication of facts. This enlightenment has come largely from the work of the American Cancer Society and the American Heart Association.

The National Foundation—which is parent to the International Medical Congress—also has engendered its share of dramatic medical progress. Not only has the Foundation performed great service in helping to make possible the tremendous discovery of Dr. Jonas Salk—the killed-virus polio vaccine—but the Foundation has supplied other research grants by which an additional breakthrough was accomplished. As you know, this more recent achievement is the oral, live-virus vaccine developed by Dr. Albert Sabin.

Continued research in polio viruses and vaccines, much of it supported by National

Foundation grants, has helped to make possible the further isolation of viruses and the further refinement of polio vaccines.

Poliomyelitis is only one of the health problems which the National Foundation is striving to vanquish through its program of research. The Foundation also is attacking two other crippling conditions—arthritis and birth defects.

Between July 1961 and the end of that year, the Foundation made 15 grants totalling $730,594 for research directly concerned with arthritis. During the same 6-month period, the Foundation made 33 grants totalling $1,022,374 for research directly concerned with birth defects.

Of course, the Foundation also has supported research in fields related indirectly to arthritis and birth defects, which most probably will yield essential new knowledge of the causes and the natures of these conditions, as well as methods of prevention and improved technics of treatment.

The important work of the National Foundation in the area of birth defects is well known to all of us. We also know much is yet to be done in this area. There are more than 600 kinds of birth defects which, if neglected, can rob children of their chances for a normal, active life, personal dignity and usefulness to the community.

For example, just one of the defects which will be a subject of discussion during this conference—the congenital malformation called "mongolism"—strikes approximately 1 of every 650 births. Chromosomal abnormalities have been linked with this disease and with others, thereby opening a vast new area of study.

Indeed, every day we are hopeful that yet another frontier may be opened to us—in a laboratory, a clinic, or perhaps in the contemplative quiet of a scientist's study. We hope that beyond this frontier science will discover new resources for the prevention of suffering and for the more beneficial treatment of disease.

If we are to proceed successfully into such new areas—if we are to save more lives and mend more bodies before time fixes deformity upon them—we must make certain that our voluntary health agencies are kept strong. Their programs are essential.

I have suggested the scope of the program of the National Foundation in support of research. The Foundation has three other programs which are equally important; one of these is the provision of fellowships and scholarships. For these grants, the Foundation selects men and women of proved scientific ability and inquiring, innovating intellect. These people will be the Salks and the Sabins of another decade. They will be tomorrow's pioneers and champions in the conquest of disease.

The National Foundation also maintains a program of patient-care which helps to create new and more effective methods for diagnosis and treatment and also helps to restore severely handicapped children and adults to productive and rewarding lives.

The fourth major program of the National Foundation is one in which we are participants—its program of education and publication. Through this program—and through its counterparts in other agencies—the American people have been made alert as never before to the immeasurable importance of medical research and the citizen's responsibility in the war against disease.

In this conference, sponsored by the National Foundation, we are to exchange scientific knowledge—to stimulate ideas—mutually to broaden and deepen our education. And the product of what we achieve here will be circulated wherever men of science can employ new proofs or test new theories. The publication of what we achieve during this conference will enlighten the minds of men—and perhaps lighten the cares of men—throughout the world.

To attend this conference—to contribute to it by offering ideas or by receiving them—is, for all scientists, for all medical men, and for all with humanitarian concern, an exceptional privilege.

We are all of us privileged, as well, to have as our principal speaker, Mr. Basil O'Connor—a man of exceptional abilities and extraordinary distinctions. I would like for a moment to outline the greatness of this gentleman.

We who are medical men or experts in scientific research or educators are fortunate to have achieved a degree of mastery of just *one* demanding profession. Competence and discrimination must be with us all the days of our lives.

And while only a few excel, even with persistence, in a *second* area of endeavor, rare indeed is the man who can master a third.

However, our speaker today has excelled in at least three fields. His multiple careers span half a century, and each of these 50 years echos with the song of public service.

Basil O'Connor took his baccalaureate at Dartmouth, went on to Harvard, and received his law degree in 1915. Following his 4 years of apprenticeship, the O'Connor name began to assert itself. From 1919, until the formation of his law-firm partnership with Franklin Delano Roosevelt in 1925, Mr. O'Connor practiced independently. The fruitful Roosevelt relationship continued until 1933, when FDR moved his office to Washington.

Mr. O'Connor has continued the practice of law—a prominent Eastern law firm bears the O'Connor name today—but law is just *one* area in which he excels.

It is perhaps in his second area of high competence that the O'Connor name has been known best. He served for 5 years as President of the American Red Cross. Since then he has been honored for his dynamic leadership by Red Cross affiliates throughout the world. Today, as President of the National Foundation, Basil O'Connor commands and inspires the largest of all voluntary health agencies—an agency whose immense service to mankind I have only been able to suggest.

The list of Basil O'Connor's contributions to the philanthropic sector could easily equal the length of our program. His decorations and honorary degrees, directorships and presidencies of funds and institutes would credit the entire alumni roster of any university in the nation.

But a great man's distinctions alone do not reveal his wisdom or make clear his competence. They alone do not fully bring to life those qualities which allow him to fill each day with the work of two.

If we are to know something of this dedicated gentleman's perspective and to share in his vision, then we must see him—we must hear him. To this, his third area of competence—where he is a man willing and able to share his thoughts and present to us some of the collected values of a lifetime—our speaker brings the same proficiency that has characterized him in both legal and philanthropic endeavor.

In a recent week Basil O'Connor was honored in the Grand Ballroom of the Waldorf-Astoria by a devoted group of friends and admirers, led by Helen Hayes. To the good wishes of that group, let us add our own birthday congratulations to today's speaker. It is now my pleasure to present Mr. Basil O'Connor.

Toward a Healthier Heritage

BASIL O'CONNOR, A.B., LL.B.

To attend this First Inter-American Conference on Congenital Defects, many of your have traveled long distances. It is with deep appreciation and great pleasure that I say to my countrymen and to those neighbors who come from beyond the borders of this country to the north, welcome; and to those of you who represent our neighbor nations to the south, bienvenidos. While we still refer to those to the north and south of us as "neighbors" the fact is that all the world is but one neighborhood now.

This conference is but another journey on a long road that we have only begun to travel. In 1960, under the sponsorship of The National Foundation, a voluntary health organization supported by the people of the United States through the March of Dimes, the first international scientific meeting on the subject of birth defects was held in London. Some of you who are here today attended it. I am sure that if the inspiring and richly informative exchange of views at that conference is any measure of the further accomplishment which is possible at this one, your travels will not have been in vain.

To the inquiring mind, discovery is the beginning of exploration, not the end. Medical science, in its achievements of the past half century, has far outpaced its own progress in any other period of its history. Yet nothing that has been learned is static, sufficient unto itself, or without continuity. All we know is prologue to the ever-widening quest of new knowledge. Every unlocked door of nature to which science has given us the key in these past 50 years has opened on a vista of many more doors beyond.

This multiplication of passageways yet to be explored is of the essence, the very nature of knowledge. If it overwhelms us with the sheer magnitude of work to be done, it prevents us from indulging in the complacency and satisfaction of accomplishment which, in the progress of any society, marks the end of the road.

The nations and the peoples represented here, I am happy to say, have not yet come to this end of the road, nor are they ever likely to in a healthy political climate. The gene of healthy discontent is inherent in most of us; the environment of a truly democratic society assures its uninterrupted transmittal from one generation to the next.

Birth defects, the causes of which are rooted deep in the mysteries of biology, physiology, biochemistry and genetics, recently have become a worthy target of intensive scientific effort. Only within a relatively few years has this serious and sizeable problem of the human being attracted the interest which it has always merited.

Because the range of relevant scientific inquiry is so broad—in human beings more than 600 kinds of congenital defects have been enumerated—and because the formulation of intelligent studies has called for so much re-examination and extension of basic theory underlying the life sciences, this new focus on the problem has served as a major stimulus to research in great depth and in many directions. Among many who have entered upon this work, there is a conviction that the long-belated resurgence of interest in the subject of congenital malformations is one of the most important developments of modern medical science.

Three years ago The National Foundation selected this category of disorders as

one of its principal targets in a new program of research, patient aid and professional education. In the creation of a new public and professional awareness, this was the beginning.

The National Foundation began at that time to publicize the fact—long recognized by a small number of experts—that these so-called deviations of nature constituted the greatest child health problem in the United States today. It undertook to inform a great nation that within its borders each year 250,000 infants survived birth with significant defects—inborn conditions which, if unattended, might cause lifelong handicap and in some instances untimely death. This meant 1 in every 16 of all infants born in the country.

Our figures were widely questioned. They came as a shock to the public and as a surprise to many individuals in the medical profession itself.

Could this be true of the United States, the great country of the "haves"? We have so many of the essentials of good health—a balanced diet in overabundance, relatively high standards of housing, more clothes than we can wear, universal education, even better medicine and health facilities than most peoples of the world, and more bathtubs.

Not only that, we have a heritage that ought to make us safe in this respect as well as proud—the sturdy stock of venturesome pioneers and the wholesome intermingling of strains that were swept into our country from many lands on the great waves of immigration. Why, then, should the United States, of all places, show such a high incidence of birth defects? Not only were our figures challenged, they were resented.

But national wealth and a high standard of living are no guarantees against these afflictions. The newborn infant is unaffected by the split-level house. He comes into the world with very little education. He is the living proof that clothes do not make the man. If, by chance, he is that unfortunate 1 in 16 born with a congenital anomaly, he would have been born so regardless of these attainments of our society.

Even the blood-heritage of hardy ancestors will not protect us completely. Our ancestors had birth defects too. We don't read about them now. That is not the kind of information family geneologists are paid to record for posterity. In fact, the contemporaries of many of those defective children of the past didn't know they existed. They were blots on the family escutcheon. They were locked away in the attic.

We know that human heritage is not a safeguard against these cases because only a fraction of them are of clearly defined genetic origin. The estimates range from 10 to 30 per cent. In other words, fewer than one third, at most, of all birth defects are known to be hereditary. Another 10 per cent are the recognizable results of "environment"—that is, of the hazards to the human ovum that may occur after fertilization and in the course of early development of the fetus. The causes identified as exclusively hereditary and exclusively environmental thus account together for perhaps 40 per cent. About the large remainder, science still has much to learn. Presumably, we are told, they result from a combination of two other kinds of causes—the circumstances of genetically induced predispositions, interacting with subtle factors in the uterine environment.

That is the description given by scientists. I am sure they would the first to admit that they are resorting to the language of possibility. The precise nature of these so-called predispositions transmitted in the genes or of these suspected "subtle factors" in the maternal environment are unknown. The 60 per cent of all birth defects which must be explained for the present in these terms is, in itself, a measure of the paucity of our present knowledge in comparison with the importance of the subject. It is an indication of the amount of research still to be done.

As recently as July 1960, at the Interna-