

LOOKING AHEAD

By RAYMOND ARTHUR DART,
Emeritus Professor of Anatomy, University of Witwatersrand

I have occupied this presidential post for the past six years and now look forward to an early retirement. The Society requires urgently someone youthful and more actively concerned with all the advances taking place in the practice of medicine in general and of physiotherapy in particular. He or she should be preparing your future. So I hope that during the coming year the Council will seek for my successor.

My first presidential address to you in 1961 mentioned weightlessness, the unknown phenomenon with which the second decade of the second half of this twentieth century faced all adventurers into space. In that year Gherman Titov, the Russian astronaut told us for the first time "It is easy to sleep in outer space. There is nothing to turn over on. Limbs do not become numb. You feel as though you are on the top of a sea wave".

Mankind is still dealing with the complexities of this new human medium. Astronauts have journeyed in space suits at the end of tethering life lines connecting them with their space crafts whilst orbiting at terrific speeds around the earth. The carrying out of physical tasks under these abnormal conditions is not easy and the hazards of spatial radiation over lengthening time periods lie ahead. The American manned satellites have met one another in space. Satellites have been sent out on sun-, and moon-circling circuits. The problem of soft landings on the moon have been solved but those of navigating on its surface, of returning to a moon-orbiting craft and of returning to earth as well as those of extended survival under all these varying conditions are full of dangers.

The wonderful thing to us all, I am sure, is that precarious as these adventures are, their solution is being tackled during our lifetime. The means of solving them are at human disposal too whatever their cost in money or in human lives. Mankind is made that way: they love jeopardy.

These activities may seem far off and remote from Physiotherapy but they are not. On the contrary what the astronauts are able to do depends upon their bodily fitness. That fitness is our objective and can be maintained only by what we learn about the tolerance of human bodies and minds.

These tolerances are usually tested by experimentation at first upon other animals. The Russians seem generally to have employed for such purposes dogs. The Americans have utilized primates. The next monkey will orbit the earth for a month. At the present time primates are being increasingly employed in all branches of biological research because of their close relatedness to human beings. Serologically and chromosomally as well as behaviouristically chimpanzees are man's nearest living relatives.

Last year it was the privilege of my wife to visit with me five of the Regional Primate Research Stations in America, those on the Madison campus of the University of Wisconsin; in the Medical School of the University of Washington in Seattle; in the Oregon Primate Research Centre at Portland, Oregon; at Davis Research Centre near Sacramento in California, and at the Delta Regional Primate Research Centre in Covington, Louisiana.

There is a Research Centre devoted to baboons alone at San Antonio, Texas. At Atlanta in Georgia the Emory University now has on its campus the \$3,000,000 Yerkes Regional Primate Research Centre for anthropoids chiefly chimpanzees, that used to form the Yerkes Laboratory at Orange Park near Jacksonville. We visited it in 1958. Another huge New England Regional Primate Research Centre is being built near Boston with the Boston University

and Massachusetts Institute of Technology and also the Harvard University itself nearby. The National Institute of Health has been responsible for promoting the establishment of all these centres spread right across the States from East to West and from North to South. The initial sum devoted to building them, I am told, was \$18,500,000. They all have computers. They are staffed with zoologists and veterinarians, anatomists, physiologists, cytologists, geneticists, pathologists and psychologists. There is not a single aspect of primate biology known to science which is not being now or will be in the near future tackled by some investigator. Few, if any, primates will escape full analysis during the remainder of this century.

I mention these matters here because I think that everybody, who has to deal with human beings personally, should at least be aware of the manner in which our knowledge of mankind and his prehistoric background is being accumulated and expanded at this stupendous rate. In the past our experimental knowledge was built on more distant animals like frogs and guinea-pigs; drugs and their dosages were based on rodent units and the like. In the not too distant future we will know the flora and fauna of all our primate fellows, their relative susceptibilities to all human complaints and their individual and total relevance to the understanding of human behaviour, communication and idiosyncracies.

In this aggregation and synthesis of knowledge relevant to man, which you will be witnessing, I have been mentioning America because the initiative there is so spectacular, but such research is not confined to that country. The Russians and the Japanese are scarcely less busily employed and the more alert European countries, like Germany and England are doing their share. France, Holland and Belgium as well as Africa participate also but their resources are not so great nor their interest, as yet, so deep. Their contributions will nevertheless be considerable.

Parallel with these close, comparative studies run those about human development before and after birth, during infancy and adolescence, maturity and old age. You are all familiar with Berta Bobath's work at the Western Cerebral Palsy Centre in London. The work of Sherrington, Magnus-Fulton and the generation of physiologists and clinicians they represent is now resulting in the advantages taken of the inborn reflexes inherited from the piscine, amphibian, reptilian and generalised mammalian stages of man's inheritance for the relief and betterment of the existence of those who happen to be handicapped.

Most of your work is naturally, like that of the doctors and nurses, concerned with the sick and the convalescent, the crippled and the aged; and very good work it is as your year's reports show. But, just as medicine has its public health and preventive aspect as well as its relieving and rehabilitative, so Physiotherapy's future too lies in what it can do to *prevent the development* of physical incapacity and *prolong* the enjoyment of fitness by humanity. So I find even more promising the discoveries that have been made in America in Philadelphia by the collaborative rehabilitation work instituted by that team composed of medical practitioners, neurologists, nurses, physiotherapists, speech therapists, educationalists and research workers, which has built up the Institutes for the Achievement of Human Potential.

They have been working together for twenty-three years. When they began nearly a quarter of a century ago they confess they had never seen, nor heard of a single brain

injured child who had ever got well. Their joint work has not only classified brain-injured children's conditions more scientifically but it has also transformed the lives of the hundreds of patients brought to them so radically, both physically and intellectually, that it has opened up new perspectives in the education of all normal children.

The improvement of their physical conditions liberated simultaneously and unexpectedly the breathing and vocalisation of these children and led spontaneously to their mastery of speech and incidentally of their reading. Some of you may remember that in May last year the magazine section of the *Sunday Times* carried over three successive issues the story of how Dr. Glenn J. Doman and his wife with a team of 100 experts had helped 400 brain-damaged children to learn to read. He had shown how any child of two years and upwards could, and should be taught to read if it could be done in such a way that they enjoyed it. The article also stated that when the *Sunday Mirror* introduced its readers in England to that information six months earlier, 17,000 people applied to take part in the experiment.

The *Sunday Times* also offered to give away 50 full sets of the large, printed, alphabet cards required by the Doman method but I imagine they were so overwhelmed by applications that they did not to my knowledge follow up the matter, which has such fulminating potentialities.

The problems that such basic discoveries can cause are overwhelming. Last month the Educational Policies Commission of the National Education Association in America proposed that "all children should have the opportunity to go to school at public expense beginning at the age of four". This has been endorsed by the President, and also by the Secretary for Health, Education and Welfare (see *Time* 1.7.66). "Time said the question is not whether but when it will come."

"The idea is not new. The National P.T.A. has been urging earlier schooling since 1898. The Federal Government financed nurseries to provide work for adult supervisors during the Depression and to free mothers for defence work in World War II." But despite this "Nearly half the Nation's school districts do not now have kindergartens; across the United States about 5,000,000 more four and five-year olds would be added to school rolls . . . to operate two more grades educators estimate that it would take at least \$2.75 billion a year to handle the extra children even without building new classrooms".

Still "Already, Illinois Congressman Roman Pucinski has initiated legislation to provide \$350 million next year as seed money' to help States undertake early schooling for ill".

It is patent to every informed thinking person today that he world is in the throes of a population explosion. Both Russia and China are dependent upon Canadian and Australian wheat. India cannot nourish her teeming millions. We know what drought does to our own Republic. The physical explosion must be moderated and the droughts overcome by local effort and assuaged by over-production elsewhere. This is the work of future computers and mathematicians.

The physical explosion, however, is minimal compared with the intellectual explosion we are in and which manifests itself in every department of human activity, whether individual or collective. We in our simple fashion divide human activities into various categories such as private (or domestic) and public (or business). Then we proceed to split these activities up further into work (which is tough and unpleasant) and play (which is supposed to be pleasant, restful and relaxing; but need not be if you are a soccer football player, or a referee, or his wife).

Our work too, like our sport, is multi-categoried. It is professional (or white-collared) and technical (or manual); but with the growth of applied scientific gadgets the plumber, carpenter, typist, secretary and electronic expert can earn more financial reward than the nurse, the therapist or the

doctor. So there is a vast social explosion (or a multiplicity of them) in progress through the disappearance of nobility and the growth of electronics and automation as well as the harnessing of atomic energy.

This social explosion is not only breaking down the boundaries of past social and national division but those too of colour, race and religion. This does not mean they will vanish in our lifetimes but they will gradually become less and less meaningful than they were to our fathers and grandfathers.

As the Editor-in-Chief of the *Christian Science Monitor*, Mr. Erwin D. Canham said last night at the University of the Witwatersrand to the packed audience in the Great Hall and adjoining halls:

"Present possibilities pointed to the time when all the world's information will be available through satellite communication, in any language, to anybody who wants it."

But the greatest explosion of all, as I said, is that of learning and education. Literacy is still beyond the reach of 50 per cent of humanity and even those who have it do not have 50 per cent of what humanity needs in order to become rational. For as Benjamin S. Bloom, Professor of Education in the University of Chicago has put it "Half of a 17-year old's intelligence is developed by the time he is 4, and another 30 per cent between 4 and 8. School at age 4 and 5 would help a child develop his language ability and a longer span of attention, give him skills in learning how to learn and how to establish relationships with others".

Those of us who know that advantages come in these respects to children who have had the privilege of continuous education from Nursery School onwards know that the only thing preventing continuity in human education from infancy in modern society is the lack of essential institutions and the appropriately skilled, educational personnel.

Why do I speak about these matters to you? Because the basic objective of these early years of human life should be the acquisition of those physical bodily skills which land their failures into the laps and hands of yourselves our therapists. These skills are the skills of the erect posture; of *maintaining perfection of poise* in every attitude of the body necessitated by the use of today's instruments and utensils (and by the tools employed in handicrafts and sports) and also by *aiming at that perfection of poise* in the performance of speech, music, dancing and the other manifold arts of humanity.

Those teachers, their workrooms and playgrounds are still to be discovered but their prototypes, I believe, are to be found partly in our Nursery Schools; partly in the various art, dancing, swimming and gymnastic schools, which children attend; and partly in the apparatus, techniques and crafts whose mastery we inculcate in our therapies. One day we or those coming after us will find them unified in schools for the attainment of human bodily and mental skill. Our paramedical professions can do much to bring them into existence.

PRESIDENTIAL ADDRESS

delivered at

6th Annual National Council of the
South African Society of Physiotherapy

held in

Pretoria, 4th September, 1966