

Progress without pain : real medical progress / The Lord Dowding Fund for Humane Research.

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PROGRESS WITHOUT PAIN

REAL MEDICAL PROGRESS

Since the turn of the century, an increasing reliance has been placed upon animal based research, to the detriment of both the unfortunate people waiting for a cure, and the animals who are used in experiments. Those with a vested interest in using animals still claim that animal experiments are essential for medical progress, but if we study the change in life expectancy since the early days of this century it becomes obvious that the greatest changes occurred *before* animal experiments became the vogue.

During the last century, the greatest loss of life was caused by infectious diseases; with the introduction of better standards of personal hygiene, food, living and working conditions, such diseases began to disap-

pear. Nationally, improved sanitation coupled with the introduction of compulsory isolation for victims of certain infectious diseases, led to these diseases being virtually eradicated, *before* the use of drugs and vaccines. In the case of smallpox, vaccination had been compulsory for many years, yet the disease was still not eradicated until compulsory isolation was introduced.



In fact, great strides in human health and welfare were made from the 15th century onwards by what the Lord Dowding Fund now calls "Real Science" methods. (These are methods which can be truly called *real science* - scientific study based upon the real world and natural disease, and not the artificial world of the experimental laboratory.)

The Lord Dowding Fund for Humane Research

The list of medical advances from the study of people is impressive: For example, cataract and glaucoma surgery, local and gaseous anaesthetics, the digitalis and nitrite based heart drugs, surgery of the kidney and gallbladder, caesarian operations, hysterectomy, mastectomy, surgical treatment of ectopic pregnancy and many others, were developed without animal research and were in common use by 1900. Far from being dependent upon animal experiments, insulin was known to exist and had been named by 1915, yet Banting and Best did not begin their work with dogs until the 1920's!



THE COST OF ANIMAL EXPERIMENTS

Conversely, animal research was responsible for delaying the introduction of blood transfusion by over 200 years; all of the major developments in this field came about through clinical research. Similarly, the development of corneal transplants was delayed nearly 90 years because of development work in animals; again, the major breakthrough was clinical, in humans. Even Florey, who purified penicillin, admitted that it was a "lucky chance" that he had not tested it on guinea pigs, for it kills them. Still the lesson was not learnt, and a multitude of drugs passed as safe in animals have since caused serious, often deadly, side effects in humans - Opren, Eraldin, Osmosin, and Flosint for example.

Such delays and chaos are summed up by the words, "species differences". All species are physiologically different in body structure and function, and indeed there are often differences between individuals with-

in a species. This is the reason that some human beings are more susceptible to side effects from various drugs. If humans do not all react the same way, it is obviously impossible to extrapolate results from a totally different species.

A good example of species differences is the Blue Baby surgery techniques developed by Blalock in 1945. This is a commonly cited justification for vivisection, but those who use it neglect to say that Blalock had to modify his operation as soon as he began work on humans - for the simple reason that we are structurally different to dogs. Neither is it pointed out that Blalock's operation was considered obsolete within 15 years. Another Blue Baby technique, developed clinically by Brock at the same time, is still the basis for treatment of mitral stenosis.

REAL SCIENCE METHODS

In addition to the clinical research methods described above, many other techniques exist and can be used for both medical and non-medical research. A few of these are detailed below:-

Analytical Techniques:

This includes the many high technology techniques such as mass spectrometry, and several forms of chromatography. They allow the separation of molecules from complex mixtures and their subsequent identification and quantification. They allow studies of drug effects in humans, by using minute quantities of the drug and examining its metabolites in the blood, urine, etc.



Chromatography first came into use in 1906, and since then developments have included the isolation of many vitamins, hormones and other organic substances. In its most up to date form, High Performance Liquid Chromatography, it is used to



measure the purity and strength of insulin, thus bypassing the tests previously carried out in mice.

Cell, Tissue and Organ Culture:

In 1885 it was discovered that cells from a chick embryo could be kept alive for several days in warm salt solution, and progress in this field developed rapidly in the early years of this century. By the 1920's it was known that cells removed from animals or humans could be grown over several generations in culture. It is now possible to keep cells from virtually any organ of the body alive almost indefinitely. In addition, sections of tissue can be grown, giving an even more lifelike representation of the human body. In some cases, small pieces from whole organs can be cultured, this being known as "organ culture". Organ culture can exactly represent the metabolism

of an organ, since enzyme and support systems can be maintained.

The advantage this has of course, is that it avoids the problems of species differences.

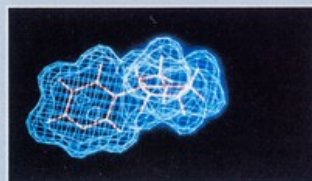
Developments based on culture techniques have included discovering the mechanism of the growth of nerves, establishment of the number of chromosomes in the human cell, the discovery that Down's syndrome is due to genetic defect, studies of the activities of hormones, study of muscle physiology, and study of electrical activity of nerves. Culture techniques also play a major role in the study of viruses, cancer causing agents and toxicity testing.

Epidemiology:

This is the study of diseases, their origins and methods of spread. This knowledge enables preventative measures to be taken against many diseases. For example, epidemiology demonstrated the necessity for sterile techniques in surgical operations. It demonstrated the ability of certain chemicals/drugs, smoking, radiation, high fat and sugar diets to cause various cancers. Epidemiology showed the causal relationship of high fat diets, high salt diets, stress, and lack of exercise to coronary heart disease. It enabled the eradication of infectious diseases by the discovery that isolated people could not pass them on. More recently, discovery of the means of transmission and prevention of AIDS owes everything to epidemiological studies and nothing to animal work.

Quantum Pharmacology:

This is a computer based technique used in theoretical chemistry to study the molecu-



lar structure of drugs and their receptors in the body. Pharmacologists have previously studied drug actions in animals before going on to human experiments, but using existing knowledge it is now possible to predict from a drug's structure what its effect will be on any given target organ in humans. This can be extrapolated to the point where the actions of a new drug, as yet unsynthesised, can be studied. It reduces the numbers of drugs which previously would have been made and then tested in animals; the entire process can now be bypassed, with a great saving in time, animals, and costs.

Quantum pharmacology has been used in the studies of, for example, nerve transmitters, hormones, beta-blocking heart drugs, histamine, anti-depressants and anaesthetics, amongst many others.

Computers and mathematical models:

Developments in computer technology have made available a wide range of sophisticated programmes which can be used for research and training. They have made possible studies and predictions of drug actions on various organ systems, and allowed further developments based upon these predictions.

These systems 'fit' molecules of the various chemicals being tested into the computer's model of the chemical 'receptors' in the body, and predict the outcome.

Some programmes keep records of the makeup of known chemicals so that when the makeup of a new chemical is fed in, a comparison of the likely effects can be made.

Others allow simulation of the normal physiology of organs such as the heart, or respiratory control and kidney function.

Audio-Visual Aids:

The primary use of these techniques is in the field of education, from primary school level right up to medical school and beyond. They include models, television, film, slides and audio/video tape. These allow study where and when required, replacing the use of dead animals in schools (dissection) and live animals in universities.

THE BENEFITS

The benefits of Real Science methods are results which can be applied directly to the patient in question, be it human or animal. No longer can vivisectionists claim that research has to be carried out for many years in animals. Indeed, after such animal tests, research must begin all over again when the time comes to try, say, a new drug in humans. Now, the drug can be designed by computer, tested for toxic effects in human cells, and its pharmacology studied in the whole human by sophisticated separation and analytical techniques.

This has the overall effect of speeding up research and reducing the costs. Both of these factors are of extreme importance to medical and veterinary progress, and will become more so with the 21st century approaching. The time has come for universities, medical schools, hospitals and commercial companies to end reliance upon outdated and unreliable methods of research in favour of development of new Real Science techniques.

The Lord Dowding Fund for Humane Research was established in 1973 to fund research into better methods of testing products and curing disease, to replace the use of animals.

Since its inception, grants totalling over half a million pounds have been made to researchers for a wide range of human and veterinary medical projects including microsurgery, dental fillings, cancer, safety testing, Parkinsons disease, schizophrenia, cataracts, kidney research, cell culture, computer aided drug design, biotechnology work, computer teaching packages which are successfully replacing frogs in nerve, muscle and heart studies in schools and colleges, and many more.

As always, the aim is that the momentum of the Fund should not only be maintained, but increased in future, hastening the achievement of our fundamental aim - the complete replacement of living animals in research with good science, which does not abuse animals. Whether or not this proves possible will, as always, be determined by your support.

HOW YOU CAN HELP:

The Fund receives no government support; some of our funds are donated by private subscribers, the majority are legacies. Donations and legacies are allocated to scientific projects, publicity materials, advertising of results, symposia, and other means of promoting the new techniques. Most of our administrative and overhead costs are carried by our parent body, the National Anti-Vivisection Society, as part of its contribution to this vital work.

- Make a contribution to humane research. Donations of £10 or over will be acknowledged, and it is suggested that advantage should be taken of the coupon below. Those donating more than £5 will receive a copy of our *Bulletin* giving details of the progress of the Fund, and the grants awarded, twice yearly. By supporting our work, you can help directly to save laboratory animals.
- Hand out our *Bulletin* and leaflets to libraries, friends, doctor or veterinary surgeon's surgery, to publicise our work.
- Organise an event in your area which can both help raise funds, and publicise our aims. Local schools might be interested in seeing a copy of our video, "Progress Without Pain".
- Remember us in your Will. The Fund is, of necessity, very dependent upon legacies and notification of such intention in this respect is gratefully acknowledged. To avoid any confusion and possible litigation, it is requested that testators use the form of bequest outlined below:-

"I bequeath unto the National Anti-Vivisection Society Limited, of 261 Goldhawk Road, London W12 9PE, the sum of for use solely in connection with the *Air Chief Marshal The Lord Dowding Fund for Humane Research*, and I direct that the receipt of the Treasurer or Authorised Officer of the Society shall be a good and sufficient discharge for such legacy."

DONATION FORM

To: The Lord Dowding Fund for Humane Research, 261 Goldhawk Road, London, W12 9PE.

- ☐ I enclose a donation of £..... for The Lord Dowding Fund
- ☐ I would like leaflets to distribute for The Lord Dowding Fund
- ☐ I would/would not like to receive regular copies of the *Bulletin*

NAME _____ Title, Mr, Ms, Mrs, Miss _____

ADDRESS _____

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END ANIMAL EXPERIMENTS

SUPPORT
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