

The case for using animals in the pursuit of scientific and medical objectives may be regarded as chiefly utilitarian, and in the light of experience this is overwhelming. But it should not be allowed to dull our ethical sensibilities. We all collectively have a responsibility for the proper treatment of the animals that serve us so well, and even antivivisectionists cannot avoid benefiting from the knowledge thus discovered. Is it possible to measure the price that is paid by the animals for the advantages we gain from them, and is it possible to cast a sort of ethical balance sheet?

Some experiments look gory and distasteful to the unaccustomed eye, and such feelings are not necessarily dispelled by the knowledge that the animal is irrecoverably unconscious and therefore there can be no question of suffering. Other experiments involving perhaps a small dietary change or a simple inoculation or even a manipulation of the environment may yet lead to dire consequences for the animal. If we are concerned with humanitarianism, are we more concerned with what looks bad or what, from the animals' point of view, is bad? If we choose the latter we must assume or acquire some understanding of the animal before we can say with any competence whether it is suffering and, if so, in what degree.

So we come to the practical considerations. To try to abolish animal experimentation must be regarded as a hopeless cause and would in fact bring in its train much more suffering than it could ever save. To try to reduce the volume of animal experimentation or its severity is quite another matter which should surely be an obligation placed squarely on the shoulders of those who use animals. There are many voices raised today suggesting that too many animals are used for purposes for which alternative methods are or could be made available; that some of the reasons for doing animal experimentation are trivial or venal; that too much secrecy surrounds the use of animals in the laboratory; and that the judgement is too much left in the hands of those using the animals who must therefore be presumed to have a vested interest in such use.

The replacement of all animal experiments by non-sentient systems is an ideal totally unattainable, because as Professor J. L. Gowans explains on p. 557 animal experiments, even a very large number of them, will always be needed to find out whether the non-sentient system is in fact an adequate substitute for the whole animal. The allegation that some animal experiments are trivially motivated has prima facie validity; for example, it might be thought that with so many people killing themselves with cigarette smoking it is not really necessary to subject monkeys and other animals to tobacco smoke, whatever interest this may have for the tobacco industry. The testing of cosmetics for safety has come under frequent attack, but while women and men insist on using cosmetics they surely must demand that they are safe to use. So called "natural" or well-established substances are not necessarily safe; ragwort tea, which can contain a liver carcinogen, is still found in some health stores, and even aspirin is not totally devoid of risk.

As for the other criticisms, animal experiments, like most other experiments, cannot be opened to the public any more than countless other professional operations. But it is not secrecy, still less secretiveness, that is the reason for refusing admission to laboratories and animal houses of any member of the public who thinks he has the right to go in. Every hotel has some doors marked private, and so indeed has almost every other place to which the public have partial access; they could not be operated otherwise.

Finally, is it right that in considering the justifiability of a given experiment the experimenter shall be judge in his own case? Nearly always he will in fact be by far the best informed person, but can we guarantee that he is capable of overcoming his understandable bias? The answer is that we can, because the situation incorporates two vital safeguards. The first is the opinion of the experimenter's own colleagues. Scientists are never slow to criticize one another, and if occasion ever arose they might be more willing to criticize questionable experiments more openly were it not for their fear that their criticisms would be taken up too enthusiastically by antivivisectionists and used, not as a corrective in detail, but as a condemnation in general. It is this fear which is itself the greatest condemnation of the antivivisectionist movement. The second safeguard is the Home Office inspectorate, and this was well recognized by the Littlewood Committee, which recommended an increased number of inspectors in the country. Inspectors visit every laboratory at sufficiently frequent intervals to inform themselves of what goes on there and who is using animals. It would be no more possible to inspect every experiment throughout its total duration than it would be to inspect the luggage of every person coming into the country. But there the analogy ends; those who want to smuggle will never feel that in trying to get away with it they are putting their fellow travellers at risk, whereas the scientist who tried to pull the wool over the inspector's eyes would not only get into trouble himself but would cast a poor reflection on his colleagues.

There is a need for a code of conduct in the use of animals, and it is appropriate that after the lapse of a century those who are most immediately concerned with animal experiments should turn their attention to codifying their ideas and principles. The initiative should come from the scientists, just as the initiative in working out an ethical code for human experiments came from the medical profession. It is not a question of putting one's house in order, because there is no evidence that our house indeed lacks order. But we should make sure that we keep it in order by anticipating the possibility of abuse and taking steps to avoid it.

<sup>1</sup> Royal Commission on the Practice of Subjecting Live Animals to Experiments for Scientific Purposes 1875, *Report*, London, H.M.S.O., 1876.

<sup>2</sup> *Cruelty to Animals Act 1876*, London, H.M.S.O., 1876.

<sup>3</sup> Royal Commission, *Reports*, London, H.M.S.O., 1906-12.

<sup>4</sup> Home Office, *Report of the Departmental Committee on Experiments on Animals*, (Chairman Sydney Littlewood) London, H.M.S.O., 1965.

## Innocent Praecordial Murmurs in Children

Most of the children examined by cardiologists at infant clinics and school surveys have been found to have auscultatory "abnormalities." M. Lesshof and W. Brigden,<sup>1</sup> for example, found murmurs in 96% of healthy children between 3 and 14 years of age. This figure contrasts sharply with a probable prevalence of about 0.5% of actual heart disease in the same age group. Though only the louder of these murmurs may be heard by less skilled auscultators, most children have such frequent medical examinations nowadays that many are discovered—so many that the term "normal heart murmur" is often used when reassuring parents that most of them have no clinical significance.

Murmurs are usually detected in three circumstances: during routine screening at infant clinics, school medical

examinations, and the like; when the heart is examined during some minor illness, often a respiratory infection; or when a child is examined to discover why growth and development are abnormal. In the first two situations the parents are worried, anxious, and hoping that nothing has been found to indicate that the heart is diseased. In the third the parents are usually no less worried and anxious, but they are often hoping that something has been found which, if treated, may allow normal growth. Nowadays, however, few deleterious congenital malformations of the heart escape early detection. Murmurs discovered by chance are seldom loud, nearly always systolic, and usually limited to early and mid-systole. They are accompanied by normal heart sounds that vary normally with the respiratory cycle. They do not radiate to any of the classical sites and may vary considerably with posture and respiration. They often have a musical, grating, or vibratory quality and sound superficial, almost as though they were between the heart and the stethoscope rather than inside the heart and great vessels. Perhaps most important of all, they do not suggest a diagnosis. Various methods have been used to grade their intensity, but because with training the ear registers sounds that become progressively louder and more obvious to the listener, intensity for practical purposes depends largely on experience and what one is accustomed to hearing. Thus a family doctor expecting and accustomed to silence during systole, may be concerned about a murmur that would seem of relatively little account to a cardiologist.

The use of the adjectives "inorganic" and "functional", so often applied to murmurs heard in the absence of apparent heart disease, has done little to clarify a situation that obviously puzzles many of those who have to make decisions about their meaning. Clearly something must be causing a murmur, and these epithets have little relevance to its possible aetiology. Sometimes the cause is obvious: anaemia, venous hums, fevers, cardio-respiratory movements, and bony abnormalities of the thoracic cage are a few. Often it is not, and no amount of detailed investigation will do other than exclude obvious causes. Recent studies on haemodynamic aspects of left ventricular function in children have shed new light on a possible cause of some by showing that up to the age of 15 years the pre-ejection time appears to be shorter than in adults.<sup>2</sup> In children with vibratory praecordial murmurs it is shorter than in normal children,<sup>3</sup> which suggests that some murmurs may be attributed to a higher contractility of the myocardium resulting in a higher peak flow through the aortic ostium. A positive correlation has been found between pubertal development and the disappearance of murmurs, and also that pre-ejection times return to normal in children whose murmurs have disappeared.<sup>4</sup>

Many murmurs are caused by minor malformations. Stenoses in the main branches of the pulmonary arteries and tiny septal defects are common examples. These are innocent lesions, and the term "innocent," by which is meant that it has no haemodynamic significance and will affect neither the way of life nor the expectation of life of the person in whom it is heard, is the best way to describe all unimportant murmurs. The term also has the advantage that it begs the question of aetiology, which is of no consequence once a decision that it is an innocent noise has been made.

The detection of a heart murmur is always a major happening in a child's life and all too often initiates a chain of events that may profoundly influence a lifetime. Much unnecessary worry and invalidism result in cases in which it would have been far better if the doctor had never listened or at least had never said what he heard. On hearing a murmur it is therefore extremely important to decide what to take seriously and what

to ignore. The seeds of a cardiac neurosis can be planted while the patient is still very young, and if once allowed to germinate they are difficult to eradicate. As the vast majority of murmurs do not signify heart disease, the medical examiner must be careful not to give the impression that the heart may be abnormal. If he is satisfied that the child is healthy, the murmur will almost certainly disappear as the child grows up, and he should keep his counsel. But if he suspects an abnormality and, being uncertain of its significance, relates his findings to the patient or the parents the child should be referred straight away for an expert opinion, so that doubts and fears have no chance to develop.

<sup>1</sup> Lessof, M., and Brigden, W., *Lancet*, 1957, 2, 673.

<sup>2</sup> van der Hoeven, G. M. A., de Monchy, C., and Beneken, J. E. W., *British Heart Journal*, 1973, 35, 669.

<sup>3</sup> de Monchy, C., van der Hoeven, G. M. A., and Beneken, J. E. W., *British Heart Journal*, 1973, 35, 679.

<sup>4</sup> de Monchy, C., van der Hoeven, G. M. A., and Beneken, J. E. W., *British Heart Journal*, 1973, 35, 685.

## Resuscitation for Students

Groups of doctors in Britain who have organized themselves to provide effective care as soon as possible after road accidents now include about 800 of the total of 23,000 general practitioners. It is not possible at present to measure their effectiveness in preventing deaths: estimates<sup>1-4</sup> of lives that could be saved have varied from 20-25% of those dying after road accidents to less than 10%, but the only definite British figures support the smaller estimates.<sup>5</sup> Remarkably enough, the doctors concerned in these schemes have trained and equipped themselves for the purpose and have been supported by voluntary subscription.

The many uncertainties in this field recently prompted an inquiry into the instruction of medical students on major trauma and resuscitation,<sup>6</sup> and the resulting report gives information from 74 medical schools in 22 countries in different parts of the world. The time devoted to the theory and practice of resuscitation varies widely, but it is not clear just what students are taught or what they practise. E. Hoffman suggests that "emergency medical care should be included in the curriculum as an independent multidepartmental topic" and that instruction should start in the second preclinical year with a one to two weeks' optional course that could include travelling in ambulances. In the first clinical year there would be a further one to two weeks' training with another two months in the second year and a nine weeks' elective period in the third. However much goodwill there may be towards improving the standard of immediate care of the victims of injury and sudden illness, it could hardly be expected to extend to setting aside as much of the students' time as that. One wonders also how easy it would be to persuade pathologists, physiologists, anaesthetists, cardiologists, and general and special surgeons to construct and provide the necessary courses. To ask these questions is not to dismiss the suggestions so much as to inquire whether they could be met and, particularly, without overburdening the curriculum. Successful management of major trauma and cardiopulmonary resuscitation calls in the first place for prompt recognition that a threat to life exists and for the means of mitigating it; this may give way directly to a period of intensive care to deal with continuing threats to life, and the newly qualified doctor should have at least basic competence in these subjects. He has less need for competence in the definitive treatment of