grants can present their researches and discuss it with colleagues from other centres.

Services the British Heart Foundation perform include circulating to all general practitioners in the country every month by means of a factfile in the form of a single sheet of paper on which is given salient points in the modern treatment of heart disease; making available a series of booklets to inform the public on all aspects of heart troubles in simple language, and which are available to be on every doctor's desk, if requested; promoting education on risk factors by posters in schools and other institutions.

The overall main object of the British Heart Foundation is to promote research so that people may live out their lives to the full without fear of premature death and disablement from heart disease or stroke.

Support of clinical research by foundations: the German view

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In the Federal Republic of Germany, clinical research is sponsored by several organizations and institutions as well as numerous industrial companies. For many sponsoring organizations there are exact and comparable figures on the extent of research funding, whereas on industrial funding no approximate figures are obtainable. Even rough estimates are unreliable, but they are high. There are two institutions which provide the largest volume of finances for the promotion of research in the Federal Republic of Germany, the German Research Society and the Federal Government. Both promote clinical research, but aim at different, partly complementary objectives. In paragraph one of its statutes the German Research Society serves science in all its fields by financing research projects and strengthening cooperation among researchers. Special attention is paid to promoting and educating young scientists. Promotion of research projects depends on requests from individual researchers; these projects (normal procedure) are financed for a period of 1–2 years, an extension is possible. Then there are priority programmes: the financing and coordination of work of several researchers at different places on a certain topic, as a rule for period up to 5 years. Next there are research units where a small group of scientists all work on one subject at the same place. Then there are special collaborative programmes. These are conducted as long-term but not indefinite research activities in a university, where scientists of various disciplines cooperate within the framework of a research programme.

They must be acknowledged by the Science Council.

In 1984 the German Research Society allocated 942.6 million DM of funds, in 1986 this will increase to more than 1 billion. In 1984, research work in internal medicine, without special collaborative programmes, was supported by 19.1 million DM, of which 3.6 million DM or 18.3% fell to cardiology (only standard procedures). This amount was distributed among 90 grants for equipment or technicians and 10 fellowships. Regarding the central position of cardiology within internal medicine, one fifth of this does not seem to be especially large. On the other hand in 1984 the 4 cardiological special collaborative programmes received 18.1% (11 769 million DM) of the allocation for all medical special collaborative programmes. This is a markedly larger share than under the normal procedure. But it is important to state that in special collaborative programmes both theoretical and clinical medicine are supported and that only \( \frac{1}{3} \) of this amount goes into clinical medicine. The relatively favourable position of cardiology also becomes evident in that four cardiological special collaborative programmes on average received 2 942 000 DM each, whereas all medical special collaborative programmes on average received 2 040 000 DM each.

Another very important means of promoting especially as far as cardiology is concerned, involves a law which provides assistance in the building of universities. Equipment which, when bought new and costs more than 150 000 DM is
50% co-financed out of Federal and Länder funds. This co-financing is assessed by experts selected by the German Research Society. The German Research Society keeps an attentive eye on support for research by not only financing new scientific equipment, but by providing funds for the replacement of expensive basic scientific equipment. The German Research Society has set aside a sum of 300 million DM a year for the replacement of large scientific equipment, but for all university disciplines and not just for the medical field alone.

However, the Federal Government and the Länder authorities can only provide about 120 million DM in total, so that the universities face a very difficult task in the years to come. In the past cardiology received 13.5 million DM a year. Since complete equipment for heart catheterization costs about 3.5 to 4 million DM, equipment for a cross-sectional ultrasonic diagnosis of the heart with Doppler techniques costs about 400,000 DM and since altogether 27 university hospitals are supported, the amount is in fact extremely small. If the generally acknowledged high standard of the German cardiology is not to be lost, then greater investments are a matter of absolute necessity. The question arises as to how our society will be able to keep pace with these developments so that it will actually be used for the benefit of everyone.

Promoting research by the Federal Government is effected on a different scale. The present programme is therefore divided into the following areas: research on the improvement of prevention, development in testing of early detection procedures and development and validation of strategies for diagnosis, therapy and rehabilitation. Also research and development on the improvement of drugs and drugs safety, development and evaluation of medical technologies, research on effectiveness and efficiency of health care institutions. Thus, for example, the multicentre project the so-called German Cardiovascular Prevention Study is financed with 73 million DM for the years 1982 to 1991. These projects of the Federal Ministry are discussed by experts on the basis of health policy guidelines, with public announcements inviting applications. Decisions are made on applications after they have been examined by experts. The ultimate decision is taken by the respective Federal Ministry.

For many years I have devoted a lot of my time to promoting research and scientific policy, so please allow me to voice an outlook which, however, must by no means be misunderstood as a licence to those responsible to fall behind in their efforts for furthering research. All Western countries provide a great deal of money for medicine and in most cases enough money for research. In the Federal Republic of Germany any failure to carry out really excellent research work is certainly not due only to lack of funds.

Science or pursuit of creativity

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I was encouraged to find that after the heart the most frequently used word by the preceding speakers was research. Since I have been a research administrator all of my life, I am going to suggest that in the management of research there is much in common, irrespective of the subject area which is under investigation. The basic message is that if you are in charge of a research group your job is to create conditions so that gifted people can deploy themselves and follow their creative thoughts. And the task of the administrator or the manager is to create these conditions and unburden the gifted individual of all non-scientific aspects and trivial jobs. That does not imply that the job of the executive scientist is a soft one because he is unburdened. He remains the best person to determine his own programme and he remains burdened with his unremitting continuous responsibility for the programme. He should subject himself all the time to the criticism of his peers and they should not make his life too easy.

I have worked for the Philips Company all my life and spent most of it carrying responsibility for research and development. As a physicist and an engineer, I am struck by the fact that physics plays a large role in your subject. The words physician, physicist and physiology have common roots because it is nature which we study. The human body