Arterial pressure is a quantity. As every schoolboy knows, quantities can be added, subtracted, multiplied and divided. Measurement, and the quantitative approach which it provides, have been essential to the growth of scientific knowledge. They account for the astonishing technical achievements of recent years, including putting men on the moon and maintaining men in space for many days or weeks. As Jacques Loeb remarked "By a scientific theory is meant a rationalistic mathematical theory based on quantitative measurement."

These ideas are so familiar to educated people that they amount to "basic platitudes," yet the ideas seem to be concealed from the average doctor—certainly those concerned with cardiovascular disease. They persist in treating arterial pressure as a quality and dividing it into two—normotension and hypertension, physiologic and pathologic, healthy and diseased, good and bad. I have just returned from a meeting of the International Society for Hypertension in Paris, and I was astonished to find that the practice is as firmly established as ever in the minds of physicians from all countries of the world. When a scientist reported to a panel that he had found no relationship whatever between the value of norepinephrine in the blood and the arterial pressure in a large sample of men and women, he was pressed by the Chairman to state whether he had found any difference in values between those with hypertension and those with normotension. When another reported that, in a small town in New Zealand, he had found no difference in the 24 hour sodium excretion of those with the highest pressures and those with the lowest pressures, he was asked by a member of the audience whether there had been any difference between normotension and hypertension. It seems that unless these terms are used, new facts cannot find a place in the mind of the contemporary doctor.
The consequence of the current practice of dividing blood pressure into normotension and hypertension has led to the classification of hypertension into a series of stages which are believed to succeed one another. "Prehypertension" in which the arterial pressure tends to be a little high; "labile hypertension" in which the pressure is sometimes above and sometimes below the dividing line; "early hypertension" when the pressure lies between two limits of dividing lines as, for example, those chosen by WHO; and "fixed hypertension" when the pressure is always above the chosen dividing line. It is the practice to group patients in this way rather than to describe the value of the arterial pressure actually measured. This current practice is not only at variance with the scientific approach, it also conceals or distorts the facts which are now beyond dispute.

Over the past 30 years the following has become abundantly clear [1]:

(1) There is no agreement as to what is the dividing line between so-called normotension and so-called hypertension, although WHO, that great propagator of science by committee, has made a recommendation. The dividing line that an authority chooses is based not on fact but on a whim.

(2) Arterial pressure is not a fixed quantity. It varies enormously through the day. In most persons the lowest pressure is about half the highest recorded during the day [2].

(3) In any population arterial pressure is distributed as a continuous variable, the curves being Gaussian in shape when converted to the logarithmic scale as is usual in the case of quantities [3] like arterial pressure and serum cholesterol.

(4) In the Western world, arterial pressure tends to increase with age, but it increases more in some subjects than in others.

(5) The various complications, like myocardial infarction and stroke, are also quantitatively related to the arterial pressure. In fact when high arterial pressure is looked at through nondistorting spectacles, the disease emerges as a quantitative one.

That the current practice of treating a quantity as a quality should have arisen in the first place is not difficult to understand. What never ceases to astonish me is that it should persist in the face of developments in science and the growth of established fact. The practice arose, of course, because when a doctor sees a patient his first concern is to establish a diagnosis: is the patient healthy or diseased and, if diseased, which disease? This habit of mind led physicians to search for a definition of high arterial pressure, since it is the increased pressure which is the single constant feature of that common malady now termed essential hypertension. The practice persists for much the same reason. The doctor will tell you that he has to decide whether or not his patient has hypertension before he can diagnose and treat him, and he must have a dividing line to assist him in this.

I have never had any doubt that this practice does untold harm to the patient. In the first place, the patient becomes identified with the "grim label" hypertension. It has been shown by Stewart [4] and others that the moment when this label is attached often marks the beginning of symptoms, such as headache, that were absent before. A cardiac neurosis is one of the most frequent afflictions that make patients consult doctors. When I was young the most common cause was a systolic murmur and the doctors' fear of rheumatic heart disease. Sinus arrhythmias and extrasystoles were other causes. Now I would guess the most common cause is "hypertension." The second danger to the patient that arises from this practice is the initiation of treatment whose beneficial effects are conjectural and in which the drugs used may prove harmful in the long term. The controlled clinical trials carried out by Hamilton and others [5] in the United Kingdom and by Freis and his colleagues [6] in the Veterans Administration have established beyond reasonable doubt that the treatment of patients with diastolic pressures persistently above 110 mm Hg can be expected to reduce the death rate and the incidence of unpleasant complications. There is less certain evidence for those whose blood pressure is over 100 mm Hg diastolic, but in those whose pressure is below these levels there as yet is no evidence at all. One of the drugs that has been most prolifically used in the past, reserpine, is an established cause of severe depression, even leading to suicide, and is a probable cause of carcinoma of the breast. Thus, the physician who insists that he must use a dividing line before he can diagnose and, accordingly, treat his patients, is not acting in their best interests. The old principle of medicine—above all, to do no harm—is being forgotten.

Moreover, all these trials have shown that the behavior of patients who are not being treated with blood pressure-lowering drugs is unpredictable, that in many cases the hypertension "cures itself," in others it is unchanged, in a few it gets worse. When these are translated into ordinary language, this means that in most patients the arterial pressure decreases with time, in some it remains about the same, and in a few it increases. This has been the universal experience. Arterial pressure varies greatly with the circumstances of measurement. The increase in pressure is a very important component of the common curiosity reflex and of its exaggeration, the defense reflex. When the patient sits in the doctor's office having his pressure taken, he is, of course, under the influence of one or
other of these responses. Like other conditioned reflexes, they tend to become diminished and finally extinguished by repeated exposure, and so the pressure tends to decrease. As a long time student of arterial pressure, I am always surprised that, considering the enormous variations during the course of an ordinary working day [2], the patient’s pressures in the doctor’s office are as replicable as they are, and that they are closely related to the untoward effects of increased pressure.

To one who, like myself, is interested in the generality of knowledge and of science, it never ceases to astonish me how insular medicine has remained. The practice here considered reminds me of the phlogiston theory. It is as fallacious and as much of a hindrance to the true understanding of the facts with which we are concerned. It is a perfect example of what that great surgeon-philosopher Wilfred Trotter [7] described as “the mysterious viability of the false.”

REFERENCES