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PROMETHEUS AND TO-MORROW*

BY

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One of the several disabilities of contemporary life is the endless assault upon our minds of scientific discovery and the glittering inventions of applied science. At one moment we are staggered by the astronomer's revelation of galaxies beyond the galaxies that were charted yesterday; and scarcely have we accepted a new breach in the frontiers of the sky when we are summoned to applaud a new invasion of the bacteriologist's fearful kingdom by yet another successfully isolated antibiotic. The physicist, having profoundly alarmed us by a demonstration of nuclear fission, throws us into deeper consternation by the more dreadful menace of fusion; and the psychologist, after shocking us by an exposure of the sexual snake-pit that underlies our conscious minds, throws us into profounder gloom with his assurance that every human brain is still haunted by the ritual obligations of the Stone Age. In the material and visible world we see aircraft flying at supersonic speeds, and, desperately trying to keep abreast of them, we study aerodynamics, metallurgy, and jet-propulsion; while nightly, before an illuminated screen and entertainment that used (unfairly) to be confined to the nursery, we are stimulated to think of the laws that govern the emission of electrons from a surface irradiated by light, and of the quantum theory of Planck that encouraged them to do so.

Amid all this new knowledge—of which my examples are but small fragments—a great deal of old knowledge has been lost. Two or three generations ago an educated person knew nothing of aerodynamics, nothing of Freud or fission, but, among other acquaintances, he would know something of the gods and goddesses who, in a classical imagination, once lived on Mount Olympus; and such knowledge had been common among educated people since the renaissance of learning. To-day, however, it has vanished, and you may think it no great loss. The gods of ancient Greece were indeed often as wanton and irresponsible as the admissions of a patient on the psychiatrist's sofa, and their behaviour was no example for the industrious, obedient, and orderly inhabitants of a welfare state. But the mythology in which they lived is not without interest, and in this century of the world there is one of its larger figures—a giant in the shadow behind Olympus—who in particular deserves attention.

Prometheus's Gift to Man

His name is Prometheus, and Prometheus was the friend of mortals. When Zeus, King of the Universe,

was in a mind to destroy all human beings, Prometheus persuaded him to be merciful, and when Zeus refused to let men have fire, Prometheus stole fire from Olympus and gave it to mankind. For this he was punished: Zeus had him chained to a pillar in the Caucasus, where all day long a vulture tore at his liver, and his punishment was eternal, because at night his liver grew whole again, and the vulture returned with the morning.

He had stolen fire, and fire was the precursor of all human arts and crafts. Without fire, man would have remained a beast of the field and the forest; but with fire he acquired power as well as comfort, he learnt to be a goldsmith and a cook, he bent iron to his will and distilled strong waters from the grain he cut. He grew in stature, and not only challenged the wisdom of the gods but disputed their existence: all because of fire. Little wonder that Zeus was angry with Prometheus! And because, in the first few centuries after the domestication of fire, it often broke out of control and consumed whole forests in a scarlet fury of destruction, men felt guilty in their possession of such a power—and, transferring their guilt to Prometheus, who had bestowed it on them, imagined him as suffering perpetual torment.

We, in a new Promethean era, suffer in much the same way. We are not so simple, nowadays, as to believe in heavenly vultures with a taste for liver, but we never doubt the iron beak of *Angst*, or anxiety, and remorse of conscience that will return with the morning. Because we too, by the Promethean agency of the physicists, have taken power from nature, and nuclear fission has already consumed great hordes of people in Hiroshima and Nagasaki, as the forest fires of primitive times consumed the villages in their clearings and the deer and the birds that sheltered in their glades. So we, who are about to enjoy the increasing power and comfort of our Promethean age, enter our inheritance with a knowledge of guilt, a sensation of fear, just as the successors to the first fire-raisers crossed the threshold of their heritage.

We should realize that they had good cause for dread; because fire in untaught hands can easily consume those hands, and all their neighbours. Very often, in the primitive ages of man, fire must have taken fearful toll of the innocents who warmed themselves beside it; and a primeval forest ablaze by night was no less terrifying to those who had escaped its heat, and stood to watch, than to us would be the blinding flash, the mushroom of smoke, and the burning city set alight by nuclear explosion. But our primitive forefathers survived their peril, and learnt gradually to keep fire under discipline.

*Inaugural address to the Leeds School of Medicine at the opening of the academic year, delivered on October 13.

Fire, though still rebellious from time to time, became their invaluable and faithful servant, and nowadays we, in the civilized limitation of our lives, must stretch imagination to visualize men who could live without it. So, some two or three thousand years hence, may our successors on earth laugh and wonder how we existed in any tolerable comfort without nuclear energy to warm and move us and drive the great engines of our commerce.

To reinforce a little this optimistic view—it is easier, of course, to be optimistic at long range—let me remind you of another chapter in the Promethean myth.

Hope, The Immortal

Prometheus had a brother, Epimetheus, who was the fool of the family—the fool has a more ancient lineage than any aristocrat—and Epimetheus married a young woman called Pandora, whom Zeus had fashioned expressly for his torment. She was beautiful beyond all other women, but lazy, mischievous, and silly. (The type is not unknown to-day, and, whatever one may think of Zeus, one must respect him for forging a genetic strain that, through the ages, has so well kept its heritable characteristics.) In Epimetheus's home Pandora found a box that Prometheus had given him, with a warning not to open it; but Pandora unlocked it, and out flew all the ills and curses of humanity that Prometheus had imprisoned: vices and passions, disease and old age, madness and the curse of daily work, out they came, and so vexed and bewildered men and women that they were tempted to a general suicide. From this untimely end, however, they were dissuaded by Hope, which also had escaped the box, where Prometheus had shut her up because Hope, as he well knew, was often delusive and a liar. But humankind was preserved by Hope, and Hope has lost neither her charm nor her youthful energy. Hope has long outlived Fear; for every age has had its peculiar fear, and that fear lasts no longer than its age. But Hope appears to be immortal, and is ever capable of inspiring new, fantastic enterprise and strange experiment. To-day, against all the odds, we hope and labour to make an end of war; there are those who hope also to make an end of the old reproach of "crying for the moon" by reaching out to it and fetching geological samples home again.

That this expectation will shortly be realized is, I understand, the confident belief of everyone in this country and the United States of America under the age of 12; and so large a faith may in time be substantiated. I myself have little interest in the moon except as a luminary. In my youth it often gave comfort and courage that daylight failed to instil, and now I take pleasure in its bright passage between the clouds, or in its seeming capture by the branches of a birch tree. But I have no desire to visit it. I should, however, dearly like to see the effect on my fellow-men of a successful voyage to the moon, and the safe return of the voyagers.

Should this happen within the lifetime of our present Monarch, then indeed there will be a new Elizabethan age to out-splendour Drake and Frobisher, Hawkins and Raleigh, Cavendish and the other great voyagers; and, as in the sixteenth century, the spirit of man will soar like an eagle to survey its new dominions with swelling pride and a recaptured assurance of illimitable power.

It would be an exhilarating age in which to live, and its exhilaration might, for a little while, ease and mollify some of the perpetual pains and difficulties that descended on man when Pandora so foolishly opened her box. But it would not, of course, abolish pain and difficulty, nor solve the ultimate problems of life. Human nature would not change, though under the pressure of increased excitement the suicide rate might fall, and more people of my age die of a coronary thrombosis. But human nature contains more than its sensibilities, more than a susceptibility to disease. It includes the obligations of the human condition.

Go to a slaughterhouse and watch the butchering of a sheep: what will first of all strike you is the extraordinary resemblance between its inner parts and those of man. Its organs are functionally the same, and the same organs exist in both anatomies. It may be that from your reading of history and observation of your neighbours you have detected other than purely physical resemblances—but a moment's reflection will assure you that the differences are even greater. Man, for example, has the privilege of laughter, and acknowledges a compulsion to work. It may be that we learnt to laugh when we first realized how much of our work was useless, and how much would be wasted; but, notwithstanding that possibility, the necessity of work remains. It was one of the primary ills that Pandora let out of her box. It was commanded by the God of Israel, who declared, "In the sweat of thy face shalt thou eat bread." Karl Marx advised the workers of the world to unite, but, in view of the increased union dues that would be exacted, promised no respite from work. And every succeeding Chancellor of the Exchequer warns us that to maintain our standard of living we must work harder than ever.

Satisfaction of a Medical Career

With all that authority behind it, one must, I fear, accept the fact that work is inseparable from our condition—and, this being so, you who have entered the profession of medicine deserve, I think, to be congratulated on your choice. You will, in the first place, have many superficial advantages. You will, unlike most professional men, be able—if you wish—to talk shop without boring your audience. For your audience will inevitably consist of persons who are subject to every ailment from arteriosclerosis to a sensation of fullness after food—who already suffer, it is probable, from psychological traumata and a cold in the head—and any reference to these, or to the organs and accidents from which they emanate, will be of interest to them.

You will, whether you practise medicine or teach it, enjoy a position of some authority, and a position of authority is a most useful—perhaps the most useful—safeguard against the anonymity, the feeling of being inconspicuous and undifferentiated, from which so many suffer in industrial society. And, again unlike the majority of workers in what is agreeably called civilization, you will, in many cases, have the gratification of seeing the success and conclusion of your work—unless, of course, you specialize in dermatology; but dermatology has its own rewards.

On a deeper level, you will have the permanent satisfaction of reading, simultaneously, a detective story that abounds in clues and has no end, and a poem, occasionally sublime, whose strength and tenderness, pathos and beauty, do not exclude some rough humour. You will for ever be asking yourselves, "What is the matter?"—considering clues, searching for new evidence, tentatively fitting a diagnosis—and before you have solved the mystery a new question will obtrude, teasing your minds afresh. I assume, of course, that you intend to be honest practitioners, not the sort of young doctor of whom it has been said (I believe I said it myself) that if his patient doesn't promptly respond to an injection of penicillin he sends him to consult a psychiatrist. Let us leave that kind of doctor to fiction, in the knowledge that fiction performs a useful service, and return to reality.

The Light of Sublimity

The patient who is a living detective-story may also be, I suggested, a poem of many parts that can, from time to time, reflect the light of sublimity. This you may find hard to credit when you examine some shrivelled little man with hammer-toes and a smoker's cough; but even he, even the most drably insignificant of your patients, will have had some experience of the wonder and mystery in which we live, and confidently he can expect more. He was born, and he will die; and no one who has seen birth and death

can deny that "fearfully and wonderfully are we made," or dispute the mystery that envelops us and, at the end, gives to the meanest a moment of dignity.

Between birth and death, moreover, even your little man with the smoker's cough may have shown humour in adversity, charity, magnanimity; and should you be required to make a post-mortem examination of his organs, you will certainly, if you examine them with sufficient understanding, feel something of the mood in which Rudyard Kipling wrote the poem called *McAndrew's Hymn*. There, you remember, the old fleet engineer looks down at the smoothly running engines that have carried his ship across half the world, and in the steady beat and hum of their working parts he hears an "orchestra sublime" and is moved to proper reverence:

"True beat, full power, the clanging chorus goes
Clear to the tunnel where they sit, my purring dynamoes.
Interdependence absolute, foreseen, ordained, decreed,
To work, Ye'll note, at any tilt an' every rate of speed.
Fra' skylight-lift to furnace-bars, backed, bolted, braced
and stayed,
And singin' like the Mornin' Stars for joy that they are
made;
While, out o' touch o' vanity, the sweatin' thrust-block
says:
'Not unto us' the praise, or man—not unto us the
praise.'"

Now if a man's mind can be so moved by a steam-engine it must surely respond with some emotion to contemplation of—shall we say?—the convoluted tubules of a kidney, the rhythmical capsule of the spleen, or the infinite benignity of a gall-bladder. Here are mechanisms far more delicate, exact, and perdurable than any steam-engine, and equally designed to work "at any tilt an' every rate of speed." But the greatest, the wildest poetry is seen, not in the post-mortem room, but in the labour ward; for that emerging head may contain murder or genius—it may be another Einstein or Noël Coward—it may be a dutiful and submissive housewife or Rita Hayworth. And those small and crumpled hands, so nervously feeling the strangeness of the air, though in all probability they will never do anything more imaginative than fill up a coupon for a football pool, may write another *Divine Comedy*, another Fifth Symphony, or tease the conservative with the brush of a new Picasso.

The inauguration of the embryo is, in all cases, approximately the same; its intrauterine development follows lines now long established; but its future, within the frontier of mortality, is unpredictable because in every viable birth there is an element of the mystery by which we are encompassed, and which, in tireless repetition, is expressed, but never explained, in a human quality that can neither be measured nor fully analysed, weighed nor dissected, adequately charted nor wholly defined: and that is personality.

An Altered Pattern

Here, I suppose, is the chief reward and prime difficulty of your profession: its practice is scientific (at least, one hopes so), but the practitioner should transcend the scientist. For the scientist relies on measurement and analysis, on observation and deduction; but the physician, who is dealing also with imponderables and qualities that can neither be analysed nor filtered, should also be something of an artist, who is inductive and capable by instinct of assessing the imponderable. A generation or two ago the artist-physician was a not uncommon figure, and in rural areas the art of healing had often superseded the science of medicine. For a doctor who had lived all his life in a country parish had often forgotten his textbooks, but learnt instead the nature and constitution of his patients, and, like an artist using a familiar palette to paint a familiar landscape, he could create at least an illusion of health—until, perhaps, the following winter brought the old cough back.

But nowadays the pattern has altered. A young doctor does not often settle for life in a rural district, and even

if he does his parish may become, within a few years, a metropolitan dormitory, or be flooded to supply a hydro-electric plant. A social revolution has also done something to change the relationship between doctor and patient; and under the benign provision of the National Health Service the doctor's skill has become a sort of public reservoir from which all may drink at any time so long as they pay their water rate; and from which many are allowed to drink free. They were certainly humane and generous minds that saw the need for an easier and wider distribution of medical skill and the comfort of a doctor's care; they were minds most generously and resolutely determined on the betterment of their fellow-men that devised the mechanism of the Act; but inevitably they changed the public character of the doctor by bringing him into a closer relationship with the State. Some part of the populace abused their new privilege—having paid their water rate, they left the tap running—and there were many doctors profoundly disquieted by the apparent division of their responsibility: on the one side the patient and their traditional loyalty to his interests, on the other their new paymaster, the State.

But the National Health Service is now almost ten years old, and I think it may be said that abuse has diminished, and disquiet been pacified. If this is so—and I can speak only with the slight authority of one who, being devoted to gossip, has gossiped over the years with a large number of people—if this is so, then the doctors themselves are chiefly entitled to the credit. They have—or the great majority have—resisted the temptation to which they were exposed: the temptation to become Civil Servants.

They realized the basic incompatibility between the ideal of the Civil Servant and the ideal of the physician: for the physician, to be honest, must from time to time behave as a most uncivil master. The young doctor may be disconcerted, on his entry into the professional world, to find malingerers among his patients. But he will find them. He will find hysterical patients, and gentle, amiable men and women who cultivate their neuroses as carefully as roses and cucumbers are cultivated for a horticultural show. And how is he to deal with them? The textbooks supply only part of the answer, and to complete it he must use moral courage: moral courage and perhaps ingenuity.

There was an Army doctor I once knew who had discovered, and practised, a very useful therapy for malingerers. He would listen attentively to their imagined symptoms, then examine, with an air of increasing gravity, some unexpected portion of their anatomy. He was, if I remember rightly, an Irish doctor. He would tell the man to return to duty, and report again in three days' time: "For if you are no better, I'm afraid there's nothing for it but an operation." And he would lightly describe an operation compared with which the martyrdom of a Christian saint was no more than a summer cold.

Glamour of Surgery

I do not know how effective such treatment would be in civil practice, but under proper controls it might be worth a trial. In our society, where so many who once enjoyed authority are now regarded without fear, the surgeon still inspires awe, enjoys the reverence of lesser men, and speaks in a voice that no one—save his own colleagues—can hear unmoved. The surgeon, out of increasing knowledge, increasing skill, and a boldness increasing to a calculated audacity, has acquired a craftsmanship at once so strong and exquisite that almost one can say there is no breakage that he cannot repair—no visible and material failure of organic communication that he cannot rectify—no gross but circumscribed invasion of the tissues that he cannot extirpate. There are specialists, indeed, who can improve on nature: alter the shape of a lady's nose, modify the fullness of her cheeks, and reduce the number of her chins—and when, to his more solid achievements of removing a growing death from the abdomen or restoring to use a shattered joint there is added a dextrous ability to bring back a beauty that

nature (or a motor accident) has destroyed, why, there is little wonder that the surgeon is not only regarded with veneration but invested with glamour.

Here I should remind you that glamour is not properly the attribute of a film actress who happens to combine an unruly temperament with a nicely developed figure. The word "glamour" is merely a corruption of "grammar," for which film actresses care little; and grammar, before it became the menace of the elementary school room, could mean the occult learning of scholars. It could mean the magic art—and to the layman the art of the plastic surgeon is close akin to that.

Justice, however, compels me to add that the surgeon, no less than his patient, owes much to the modern anaesthetist: without the anaesthetist the surgeon would have fewer patients, and patients would have less admiration for the surgeon's skill.

The World of To-morrow

But it is not my intention to offer a conducted tour of the contemporary clinic, the modern operating-theatre: a task for which I am quite unqualified. I have merely been taking a sidelong glance at some aspects of the profession you are about to enter, and may adorn, with the purpose of suggesting that, while some of you may die of overwork, none of you need perish of boredom.

With the purpose, also, of reminding those of you whose studies have precluded much study of the ancient world, that mankind has had a fairly long history, and on the threshold of a new Promethean age it is useful to recall the old one, and realize that men not only survived the peril of fire, but tamed it and made it their servant, and built upon the crafts that fire made possible a long succession of civilizations. Many of these have disappeared—whether by ill fortune or the growth of their own iniquity it is now hard to tell—but a by-product of the Promethean ménage has outlived all the casualties of men, and is still with us, more exuberant than ever.

Hope, the miraculous survivor, came into the world—according to the myth—by the agency of Epimetheus, who was a fool, and Pandora, who was beautiful but silly; and Hope has been as good a servant to mankind as fire. I can find no explanation for her curious origin except in a theory put forward by my old friend, the late James Bridie, who was a good physician as well as a brilliant dramatist. He, in one of his plays, boldly asserted that "God is a very good biologist."

You may, of course, object that much of my argument is invalidated because Prometheus never existed; but that does not alter my case. For there was a Promethean age, and there is about to be another. And in the new world of to-morrow—among machines of hitherto unknown power, in the din of rockets taking-off for interplanetary space, between electronic brains that fortify the already dazzling intelligence of our scientists—in this new world mankind will still be subject to the ills and torments released from Pandora's box. You, as physicians, will have to deal with people who still suffer from all the old familiar diseases, as well as brand-new psychosomatic ailments of unknown origin—and in these circumstances, and with immortal Hope beside your chair, you may (I repeat) die of overwork, but it is quite unlikely that you will perish of boredom.

The October issue (Vol. 168, No. 10) of the *International Record of Medicine and General Practice Clinics* contains a symposium on medical writing. Dr. H. E. SIGERIST opens it with "Thoughts on the Physician's Writing and Reading." Then come papers by Professor HANS SELYE ("How Not to Write a Medical Paper"), the Editor of the *British Medical Journal* ("An Editor's Prejudices"), Dr. WALTER C. ALVAREZ ("Medical Writing"), and Dr. FÉLIX MARTÍ-IBÁÑEZ, editor of the *International Record* ("Books in the Physician's Life").

SOCIAL CLASS SELECTION AND CLASS DIFFERENCES IN RELATION TO STILLBIRTHS AND INFANT DEATHS

BY

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The effect of environment on stillbirths and infant deaths is usually assessed by comparing the rates of different social classes, class being defined in terms of the occupation of the husband—that is, the child's father. This index of environment provides no direct information about the wife, whose influence on the course of pregnancy, labour, and early infant care is more obviously relevant. Many primiparae have only recently married (Baird and Illsley, 1953), and may continue during pregnancy to live in their parents' home (Thompson, 1954); in such circumstances it would seem reasonable to base the wife's social class on her father's rather than her husband's occupation, thus providing a measure of her pre-marital environment.

A preliminary study of Aberdeen primiparae (Baird and Illsley, 1953) showed considerable interchange between social classes* at marriage, so that, for example, many daughters of skilled manual workers (Class III) married "upwards," to men in the professional and managerial classes (I and II), or "downwards" to men in semi-skilled or unskilled occupations (IV and V). Women who married into a higher social class were usually taller and in better health, were better educated, and came from smaller families than those who remained in the same class or who married into a lower social class.

Clearly, selective movement between classes at marriage, such that healthy well-grown women would tend to marry into higher social classes and small women with poorer health and physique into lower classes, might exercise a considerable influence on class differences in vital statistics. In the present paper this process is examined and its effect is shown on the rates of prematurity and obstetric death (stillbirths and first-week deaths) of the social classes in Aberdeen.

Method

All married primiparae resident and delivered in the city of Aberdeen between July, 1950, and December, 1954 (4,344 cases), were studied. Detailed medical and social data were available for 3,911 of these who booked for confinement in the Aberdeen Maternity Hospital. Less information was available for patients who booked for confinement in a private nursing-home (298), or in their own homes (113), and for those who made no booking arrangements (22). Certain analyses, therefore, are restricted to maternity hospital patients. Intelligence test data were obtained by Miss E. M. Scott in a special study of a sample of 278 hospital primigravidae (Scott, 1954).

The social class of the patient's father was based on his main occupation during the patient's school years.†

*Social class is based throughout on occupation, in accordance with the method used by the Registrar-General (1951).

†This information was not obtained for 63 patients, most of whom were delivered in the nursing-home or in their own homes. In a further 66 cases where the conditions of upbringing were variable or highly abnormal it was impossible to make a meaningful classification, even though a great deal was known about the patient's upbringing. The exclusion of these 129 patients made almost no difference to the prematurity and obstetric death rates of each husband's social class.