

Gravity, an Unexplored Factor in a More Human Use of Human Beings

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The century just passed may well be examined by future historians as a period during which humans explored their world with a tool, or if you will, a microscope, of specialization: as a period when people thought that by increasing the detail known about the enveloping universe, they could have their world under control. The fallacy of this is now increasingly apparent. Even specialists in a field sense that they are becoming fixed in a limited area, and that they have lost not only the sense of movement, but that of perspective and orientation. Consequently many thinkers are now spending time and effort to understand and lessen this cultural imbalance.

However, these attempts have laid an increasing emphasis on education as an answer, as if the solution lay in integration within the educational approach. But is there a fundamental fallacy, or an oversight, in this thinking? Is it perhaps neglecting a profound truth?

From time to time thinkers ranging from ancient philosophers to modern psychotherapists have expressed their conviction that man projects into his creations only that which is within himself. The key words of this premise are "within himself". Men, facing words like these, are apt to see them as metaphors, pointing to some tenuous, spiritual, wraithlike self. To only a few has it occurred that such words pertain to a tangible flesh and a material blood, and to these few has come the recognition that man has quite literally projected into a physical world that he himself has created externally, the mechanical world in which he lives unconsciously-, that from this universe which exists within his own skin he has derived the prototype for the levers, the wheels, the communicating mechanisms which now constitute his material world. Even the most recent electronic systems have come into being in man's outer world as projections of the patterns which exist within his material body in a 3-dimensional form. It is beside the point to argue that the man who first created a well-functioning door-hinge knew nothing of the fact that in structural essence and in function this hinge was similar and subject to the same physical laws as some of the joints in his own body -the ankle and knee, for example. Such unconscious projection's have always been at work. Fortunately now, thanks to a greater understanding of the human psyche resulting from the efforts of psychological schools, we are more willing to accept them as materializations of a more tenuous essence.

Since it seems demonstrable that man's outer world is a projection of that which is within, is it not possible that some of the problems of our times might be resolved by examining the man himself, his physical being, his body. Could it be logical to suppose that if a way were found to organize better the actual physical structures of men, their other confusions, mental and cultural might

lessen.

Man's image of himself, as he projects it at this date, is largely created by the medical and allied professions. As a scientific construct it is similar to those seen in other departments of human knowledge, which have come into being through the same type of analytic approach. The century of specialization has collected a vast information about each and every organ of the body. The data available through modern research methods to anyone capable of interpreting them is beyond the wildest dreams of the medical scientist of even fifty years ago. But this information has been derived from, and applies to, isolated bits of human tissue. These tomes somehow resemble the transparent detachable mannikins with which children are taught to visualize a body, and like these the books seem to be aggregates rather than totals. Here is a liver, hard and discrete, and somewhat oversized. In the doll it is detachable. It can be taken out and held in the hand. This, too makes it like a projection-in-space of the book. Similarly, we can examine a pair of "lungs", equally hard and discrete, with labels on the various vessels so that we may know the name, the symbol, which is functioning or malfunctioning. This piece can also be taken out and looked at, and so it goes. Here is a heart, a kidney. Somewhere else is a stomach and even a brain. But the big question is, in all these bits and pieces, *Where is the man*. Can he be taken out and looked at? This is, of course, merely the basic dilemma of the analytic method. In spite of the rich harvest of information we have reaped, the fact remains that people are still complaining of their aches, their pains and their inadequacies. It is not merely the layman: the conscientious professional as well is dissatisfied with his incompetence in dealing with the problems on his doorstep.

Looking critically at the biological sciences which deal with well-being in the individual man, it is apparent that the tremendous advances in this field have been made in data concerning the acute problems, the plagues of the past. The elucidation, for instance, of the factual sequences involved in the development and distribution of epidemic diseases, and of their modification through hygienic measures, has advanced to a point where specialists in the field can justly feel that the situation is well under control. But the threat of chronic degenerative disease, of arthritis, of cardiovascular degeneration, of advancing senility, etc., is still with us, and in consequence people are rapidly increasing the medical insurance designed to care for their later years.

In the seventh decade of our century, an increasing number of enquiring minds are dissatisfied with the results of bigger and better analyses. They realise that at this point the birth of a child implies the likelihood of his growing to maturity. However, when he becomes an adult, his physical pains and emotional miseries will probably be such that he cannot live without sedatives and tranquilizers. Actually this is the meaning of the tragic Slaughter of the Innocents we have seen in this year of grace. The several thousand irremediably deformed children in Western Europe will bear witness throughout their lives to their mothers' assumed need for tranquilizers.

Again we can ask, *Where is the man, what has happened to him*. Can there be any method of approach hitherto neglected which will permit him to emerge from this chaos? Have we in some direction, at least, come to the end of the road labeled Analysis? If so in what direction do we look for a synthesis-for an Organization of what is now available to us?

Attempts, of course, have been made to look in new directions. Throughout this century dissatisfied men have tried to find well-being through an understanding of their emotional rather than their physical make-up. But the various forms of psychiatric techniques are still basically analytic, as evidence by the name, "psychoanalysts". The same criticism applies to the medical derivative of psychiatric thinking now identified by the label "psychosomatic".

The problem remains. We still ask, how do we develop a method of synthesis making possible a better human. Where do we find a technique for such integration.

The psychoanalytic schools have succeeded in establishing a most vital point-, namely that a single part of a man which can be dealt with exclusively as a material, physical entity, a so-called body-does not exist. These specialists have demonstrated conclusively that emotional problems are invariably important factors in the thousand natural shocks that flesh is heir to. By implication, and in some cases by techniques (the work of the Reichian school, for example) they have shown that physical practices, continued through a long period, can modify emotional ills for the better.

Feldenkrais has also demonstrated this point. The excellent work he has been doing in Tel Aviv, encouraged by the Israeli government, has implemented the premises originally advanced in his classical treatise *Body and Mature Behaviour* (Routledge and Kegan Paul 1949). Feldenkrais's basic thesis, as advanced in this book, applied the idea of the psychoanalysts in a more detailed and practical fashion. His seeing eye visualized the body as disclosing contours which betrayed the individual's dramatization of his emotions. He also analyzed and to some extent recorded the muscular systems which by way of their deviant activity made possible the individual's outward expression of his predominant emotional "set".

v In addition to the foregoing physical-emotional techniques, some exploration has been undertaken into the deeper essence of man. These programmes might be described as techniques for developing consciousness of the self. They elicit awareness on the man's part of how he performs an act, and they permit him to examine his emotional responses by way of his external dramatization. In England the most widely known of this type of technique is that derived from the insight of F. Matthais Alexander. In Europe the work of Elsa Gindler is better known, and her ideas are becoming increasingly popular in the United States as well, especially in New York and California, through the devoted efforts of Charlotte Selver and others.

All these methods, however, show the familiar pattern of specialization-

removing given aspects of men, examining them more and more carefully, in the expectation of the triumphant cry:

"Eureka! I have found it! " But we hear no such cry.

The problem foreseen and examined by Smuts under the name "Wholeness", the problem of integrating a man - can we solve this?

What is an integrated man? What are the hall-marks by which we can recognize him? When is a man "whole"? What makes a man "whole"? Since the words "heal" and "whole" are related etymologically, we might also ask, is the man who has been "healed", "whole"? In other words, does the problem of Organization and integration lie within the field of medicine or psychiatry, or within any of the disciplines named with the suffix "-pathy". Is a whole man merely one in whom the *Vis Medicatrix Naturae* has been free to restore an original status quo after an incident of illness, or can we discover a "whole" which is truly greater than the mere sum of its parts? Is there a personal evolution possible, leading toward a greater man, or must we be for ever limited by our present preoccupation of righting a something which is wrong?

In any attempt to create an integrated individual an obvious starting place is his physical body, if for no other reason than to examine the old premise that a man can project only that which is within. To the medical specialist, this body, and this alone, IS the man. To the psychiatrist the body is less than the man-, it is merely the externalized expression of personality. Neither of these specialists has accepted as real a third possibility-, namely that in some way, as yet poorly defined, the physical body is actually the personality, rather than its expression; is the energy unit we call man, as it exists in its material, 3-dimensional reality. For the pattern is only the externalization of the energy unit. Conversely, the level and quality of the inner energy is limited by its pattern. Furthermore this particular pattern is the only one that this energy unit, at its present level, can manifest.

To the physicist and chemist, this is a familiar and very real idea. It is these workers who have succeeded in formulating hypotheses which bridge the gap between the energy unit as energy and its externalized material form. In a chemical text a pictorial representation of atoms and molecules built from basic units of electrical charges form the ABC of understanding. These theories emphasize and demonstrate the premise that arrangement in space is fundamental to the behaviour of a substance, however simple it may be. Thus an inorganic substance, salt, originally thought of as a molecule consisting of a union between two atoms, can be more precisely evaluated if the atoms are seen as energy fields, patterned solar systems whirling in balanced orbits. In postulating that such a substance as salt is the externalized manifestation of polar attractions binding negative charges to a positive core, the behaviour of the substance becomes more predictable. The aspect of this which is significant to the biologist is the chemist's realization that energy charges in a particular pattern can be recognized in a 3-dimensional world as a white crystalline substance, with well-defined and very specific properties, a given melting point,

a known capacity for conducting electricity, a definite solubility in water of a given temperature, etc., etc. Furthermore, microscopic examination shows crystals whose edges are sharply defined and whose plane surfaces meet at specific and definite angles. Any deviation from these indices indicates an admixture of some other material, a so-called "impurity". Significantly, any deviation makes the chemical behaviour less predictable.

In this relatively simple situation it is common knowledge that behaviour bears witness to a given structure. Structure, here, means relationship in space. And structure (relationship in space) on another plane, in another dimension, is behaviour.

This kind of hypothesis has proved very useful in understanding and predicting behavioural patterns in inorganic and therefore fairly simple structures. Organic molecules which eventually unite in labile conformations permitting life, plant, animal and human, are, of course, more complex. Understandably such systems require time for elucidation, although much is now known by specialists in this field.

Can this sort of thinking be the key in our search for a behavioural pattern, either emotional or physical, worthy of the name integrated? What is an integrated pattern in this context. If integration be defined as that whole which in its behaviour shows itself as greater than the sum of its parts, where do we start to create such a whole?

Venturing out into the real world, looking at material structures, not crystals, but flesh and blood men, we are struck not by their similarity, but by their differences. It is true that practically all men have two arms, two legs, a head and a torso. But compared with the exquisite precision of pattern exhibited by that modest little chemical, salt, they are indeed a random lot. One man's head is set too far forward on his shoulders, another's is too far back. Some heads droop, others confess their owner's attitude by being cocked off to one side or the other. Some arms are straight, others crooked, some shoulders snuggle up to their owner's ears, others are wide and sloping. Some people have well-defined waistlines, in others the torsos are box-like and the abdomen twice the appropriate size. Some knees knock with every step, others can never meet. Yet these people think themselves *normal* and are so considered by their friends. They can, of course, be averaged, but the patterned structure of the chemist's world is conspicuously absent.

An obvious argument is that people differ, and properly so, through possessing and exercising free will. Or, in the idiom of the psychoanalysts, they dramatize their psychological attitudes. Thus the man whose predominant set is fear will certainly betray it in the carriage of his head, neck, shoulders and rib cage. His defensive lack of ease will show as physical as well as psychological tension. There may be physiological imbalances of many sorts, e.g., a disturbance of the sympathetic parasympathetic nervous balance which must be present for the maintenance of good digestion; tensions and irregularities of the rib-cage itself

may become apparent as asthma, even as a disturbance of normal cardiac function. A head consistently thrust forward gives rise to an anterior displacement of the neck which will not be accessible to voluntary correction, nor to the directive: "Get your head up!" The resulting symptoms may vary from repetitive headaches, to a shoulder bursitis. Various visceral functions too, can be affected through restrictions of the vagus nerve.

When a major displacement seriously affects the pelvis, as for example, when the gluteal region is compulsively carried far back of its normal posture, a really complicated pattern of physical aberration can result. Any marked deviation of the pelvis must involve the position of the sacrum. In that the sacrum is a keystone for the entire spinal structure, the resulting compensations in the upper spine may force the individual vertebrae out of the precise position in space which permits the best functioning of the viscera innervated from that particular spinal level.

In recent years the fashion in which physical structure and psychological expression are linked, has been looked at by several schools. Thus in Reich's book, *Function of the Orgasm*, many psychological causes are discussed in terms of eventuating pelvic displacements, and the immobilization's arising from them. While it is possible and even probable that physical patterns can and do result from psychological attitudes the converse is also true. There are certainly psychological attitudinal sets which have had a purely physical genesis. Such aberrations can originate in various causes. Usually they reflect the accidents experienced, the childhood fall from the apple tree or down the basement steps, the slip from the bicycle, or the collision with a tree or car, the driving or ski mishap, the devastating motor crash, etc. Any of these may contribute to the infinite variety of physical deviation from normal and appropriate body function.

A relatively simple accident which nevertheless leaves the body malaligned and out of balance can effect the psychological sense of the individual. He feels his body to be inadequate and therefore he projects the picture of inadequacy. Such deviations mean a change in the energy field, in the physical as well as the psychological man. In terms of an accident this may be temporary or it may well be permanent. If the damage has not been too great, as healing progresses the structures involved are able to resume their original positions. "Damage" in this sense does not necessarily mean broken bones. Generally, it implies relatively slight displacement of a bone due to the impact of the blow. Then as the swelling and contusion subside the structures may be left in a position which is not quite normal. This constitutes a "scarring", a fairly irreversible change which may or may not be visible. The extent of the displacement of both bone and muscle structure determines the amount of interference with the normal movement of the part. A slightly different pattern results and if in addition a change of weight bearing is involved in this alignment, the structure will be rebalanced by compensatory changes at points quite distant in the body. In terms of actual flesh and blood, such changes consist of a thickening of tissues already there, or the formation of fibrils of connective tissue which prevent free movement within the area. It is necessary that some restriction occurs, for if the

original degree of movement persisted, the body, modified as it has been through the traumatic incident, could not be balanced - it would not feel "strong". Strength, as we perceive it, may be reporting one of several body situations. At its best, it will indicate a balance of muscular (and therefore of nervous and glandular) force. At its worst it records a splinting of the flesh affected by the reinforcement of the disturbed tissue. Eventually such reinforcement defeats its own end, and the body either as a whole, or in terms of the local area, becomes hypertonic: in popular parlance, muscle-bound.

This pictures the sequence of response to physical trauma. But it is also the map of the body's reaction to emotional mishap, or to an attitudinal set which is in danger of becoming chronic. An individual experiencing temporary fear, grief or anger, all too often carries his body in an attitude which the world recognizes as the outward manifestation of that particular emotion. If he persists in this dramatization or consistently re-establishes it, thus forming what is ordinarily referred to as a "habit pattern", the muscular arrangement becomes set. Materially speaking some muscles shorten and thicken, others are invaded by connective tissue, still others become immobilized by consolidation of the tissue involved. Once this has happened the physical attitude is invariable; it is involuntary; it can no longer be changed basically by taking thought, or even by mental suggestion. Such setting of a physical response also establishes an emotional pattern. Since it is not possible to express a free flow through the physical flesh, the subjective emotional tone becomes progressively more limited and tends to remain in a restricted and closely defined area. Now, what the individual feels is no longer an emotion, a single response to an immediate situation; henceforth he lives, moves and has his being in an attitude.

Feldenkrais was the first to call attention to the fact that all types of negative emotion find expression in a generally lessened tone of the dorsal extensors. Necessarily there will be compensatory hyper-tonicity of the flexors. Obviously, before such a situation can be changed, before the individual can escape from his chronic fear, grief or rage, the physical tone of the muscles, which in their debilitated state permit only of negative emotion, must be changed.

It is very apparent that this is the story not of a whole man but of the random deviants from wholeness which are the average people of our day. By implication, however, it underscores the point that an integrated man might be defined as a person capable of free flow, free exchange, free movement (which we feel as resilience) both in physical body and in emotional expression. According to such definition, what constitutes free flow, what impedes free flow. Why are bodies so random in form. Is this random form the outward stamp of one, more fundamental, cause which then acts either in the structural or the behavioral field?

The behaviour patterns of an integrated man cannot be formulated merely by thinking about them, or by speculating on what they should be. Fortunately there are purely operational methods available. And these show that an approach from the structural rather than the behavioural side gives quicker, and

in some ways more predictable, results. In this way it is possible to build more symmetrical, more balanced men from these random individuals, and then to observe the changes.

In working from the physical aspect of bodies, these grosser structures must be treated as though they were buildings, obeying the general laws of physical mechanics. In other words, it is possible to look at a body as though it were an architectural unit. Such constructions manifest strain to the degree in which they deviate from an optimal relation to gravitational pulls. In buildings we recognize the origins of these strains. In bodies we do not. The body differs from a conventional building in that it is broader at the top than at the base. An even more fundamental difference is its need for flexibility. It must have the ability to move in a great variety of ways. Both this atypical weight distribution and flexibility emphasize the need for internal symmetry, since a body can be stable only by acting as though it were balanced about a line. This means that the body masses must be able to counterbalance each other gravitationally, and be free to adjust to changes in muscular volume or mass as the latter alters with movement. Whenever a movement demands flexion, some muscular structure shortens and thickens. Simultaneously its antagonists, or counterbalancing muscles, must be able to lengthen or stretch, and freely adjust among the contiguous structures. When scar tissue forms or an early degeneration sets in, the tissues are permanently thickened and therefore unable to adjust.

Alternatively they may be dehydrated. Sometimes fibrils of connective tissue form between the fascial envelopes of adjacent muscles. Obviously, then, the adjustment necessary for normal movement either does not take place at all, or occurs in a limited or distorted fashion. Not only does such deterioration affect the atonic muscle in its roles of initiating movement, but its response is limited when this muscle is called upon to support its antagonist. Either situation implies that the support of the counterpart will not be satisfactory.

Consequently other structures must also be called on, or else the body itself must redirect its demand so that the movement can be accomplished by a different integration. Whatever the solution, the result is not satisfactory, either from the standpoint of the energy expended or from the precision attained. This is necessarily so, since for any given movement there is only one pattern of action which is most economical. It is interesting to note that it is this pattern which seems most aesthetically satisfying as well. When we attend a ballet, it is this ideal type of movement which we hope to see. Any deviation alerts us. We watch the line. In theory they all perform the "same" movement at the "same" time. But subconsciously we have become aware that this is not what we are seeing. However well-trained each of these girls may be, she can work only within her own muscular limits. Any restraint affects both precision of movement, and exactness of timing. The raggedness may be lessened by intense training, but true precision depends on liberating the restrictions of the entire corps. Only in this way can a more satisfying balance and a more exquisite adherence to design be developed. Physical co-ordination is a spectrum. In all walks of life, and in all age groups, variations from a true normal can be seen distributed according to a wide gradient scale. There is more precise or less precise movement, but perfect movement is not to be found in a world in which

muscles are subject to many kinds of interference.

Muscular balance, however, has a broader and more urgent significance than mere co-ordination or even than aesthetic appeal. It is the outward and visible sign that vital communications are functioning freely. Communications, in this sense, refer to the actual flow of body fluids in their role of transmitting metabolic and hormonal substances, as well as to the free transmission of nervous currents. Muscular balance indicates, that the actual expenditure of energy made by the body in the course of any physical work, walking, running or manual labor, is minimal. Under these conditions work is being performed with least effort, with less drain on the energy available to the body for the efficient performance of its own vital functions of digestion, circulation, etc. The surplus becomes available to the man to carry on whatever external activity interests him, his profession, his business, or his tennis.

It seems possible then, to consider muscular balance with its accompanying physical grace, beauty and co-ordination, with its greater psychological ease and emotional security, as an important hall-mark of personal integration. In view of this, perhaps one is justified in believing that without muscular balance an individual cannot be considered integrated. The original problem is now transformed into the question, What is muscular balance, how can we identify it, and can it be created at will; what interferes with it; why do bodies fail to have a satisfactory degree of balance? There have been many schools who have claimed to have the answer, but is there a criterion to test their claims?

Certain considerations become self-evident if we return to a basic architectural awareness of the mechanics involved. First, we must recognize the overwhelming gravity component and the importance of its role in the life process of man. This force which unites us to the earth is so much with us that we are of necessity unconscious of it. As a result we give a vague assent to the idea that gravity is important, that gravity is ubiquitous, that gravity tears a body down. But the critical evaluation of gravity as a supporting and uplifting force in the life of man has received little consideration. As a result many efforts have been made in developing systems of exercises, rhythms, dancing and movements with the avowed goal of inducing co-ordination, but few systems have ever analyzed the related problem of gravity, or the role it plays in physical behaviour. Body co-ordination has been thought to be many things. In point of fact, it is the evidence of how well the man is related to the earth. In this formulation it is the concept of *relation* that needs to be stressed. For man is an energy field, as the earth and its outward envelope of forces is an energy field. How well a man can exist and function depends on whether the field which is himself, his psychological and physical personality, is reinforced or disorganized by the field of gravity. Looked at from this angle gravity not only upholds a man, it feeds him.

In a real and material world, this supporting energy can be supplied only if certain conditions are met. Gravity as a force acts as if it operated through a vertical, a straight line at right angles to the earth. Therefore, to profit from this

flow, a man must be so organized that he operates as though he existed symmetrically around such a gravity line. Because of his segmented structure, this can and does offer difficulties.

In this aspect a man presents a dual problem. There are, of course, the separate and very well defined segments of the spine, the vertebrae. These are the units which have been studied by the osteopathic and allied schools. However, in examining or attempting to modify the interrelationship of gravity and man, it is not these smaller units which offer the key; only when they are aggregated into grosser weight elements of head, thorax, pelvis and legs do they seem to have a basic significance.

It has long been recognized that in an erect man, certain spatial relationships are normal. The problem has been to evolve a technique through which they could be restored or evoked. Thus in an erect man it should be possible to draw a straight line through the ear (bisecting the external meatus), the shoulder (head of the humerus), hip bone (head of the femur), knee and ankle (external malleolus). If this idea of a one-dimensional line be expanded to three dimensions the body appears as an aggregate of blocks (head, thorax, pelvis, legs) which must be stacked in a stable fashion before this line can appear. The picture which emerges offers a practical approach to the creation of a more integrated man. Since the actual position in space of each of these units to its neighbors is determined by its muscular and fascial wrapping, the blocks can be shifted by altering the length and tone of these myofascial tissues. In order to accomplish a permanent change, it is usually necessary that the actual position or distribution of muscular fibers be very slightly altered. This happens spontaneously as individual fibrils stretch or as fascial sheaths again slide over each other instead of being glued on some adjacent sheath. Unless such a change is made the body reverts to its original posture and the restrictions to fluid flow and to interpersonal communication are rebuilt.

The precision which can be attained in this block-stacking becomes of very great importance. On it depends the distribution of the gravity pull as well as the free flow of fluid components within the body. In looking at live people the units most likely to catch the attention as being seriously out of line are head and shoulder areas. "Oh, if he would only hold his head up!" "Oh, if he would only bring his shoulders back!" say the family. But these well-meaning critics fail to realize that heads cannot go up or shoulders back in the relaxed position of a well-established posture until the lower structures are adequately related to the earth, as well as to each other. Basically this emphasizes the way the feet contact the ground, also the way they relate themselves to the bones of the lower leg. All of this may be evaluated through the integrity of the ankle joint. Ankles cannot function properly when feet are everted (toed out). Neither the ankle nor the knee can act as a true hinge joint if the fibula (the smaller bone of the lower leg) is displaced either anteriorly or posteriorly. Both of these mishaps are to be found, usually, as sequels to some childhood accident, the bicycle collision or the ski pile-up.

Much is heard in manipulative circles about pelvic rotations. But to the harassed dressmaking mother the facts behind it register as "Mary's hips don't match, one is higher than the other, and more forward." To both Mary and her mother this is a never ending nuisance. Her clothes do not hang properly, they never look smart. But neither of them suspect that Mary's muscular ineptitudes as well as her menstrual or later child-bearing troubles, and the nervous tensions which reflect into her school difficulties, are actually the manifestations of this rotational strain within her pelvis. Still less do they realize that before anything can be done to change the situation fundamentally muscular balance must be established about the ankle and knee, as well as around the hip joint.

The problem of chronically aching backs, of sacroiliac pains and "slips", of the recurrent pains in the midback, are understood by a great many people as manifestations of imbalances of the dorsal structures. On a temporary basis osteopaths and other manipulators give satisfactory relief to these situations. However, symptomatic relief has little bearing on the root problem, namely, the creation of the integrated man; or one might better say of a man whose integration shall not be destroyed by the gravitational pull of the earth. This search leads to a further goal than the mere creation of a symptom free individual. There are many reasons why a person may be either pain-free or unaware of the existence of pain. In spite of his apparent ease he may still be deprived of the uplift, the beneficent support of the field of gravity. The duality of the role played by the earth's force in the economy of the human is becoming a matter to be reckoned within our definition of wholeness. On the one hand gravity can be seen as an unrelenting adversary who never sleeps, a destructive force against which we wage constant warfare merely to retain our effective position among the living. On the other hand gravity may be experienced as a creative force whose integrating quality is the Great Healer. In practice the more its support is evoked by organizing the material body so that the earth's gravity can work through it, the more apparent it becomes that any claim to the word integration, either in the physical or the psychological fields necessarily implies an adequate support from the earth.

Having worked for many years to evolve a comprehensive technique for making the supporting force of gravity available to humans, I feel that I have seen results which warrant at least one conclusion, namely that no situation exists in a human which a psychologist would diagnose as a feeling of insecurity or inadequacy, unless it is accompanied by a physical situation which bears witness to the fact that the gravitational support is inadequate. It is even more obvious that when this support is lacking, evidence of its absence appears on the physical plane as impaired function within the body systems, digestive, circulatory, etc.

If the foregoing assumptions prove valid, and many years' work with unbalanced bodies have demonstrated this claim, it is logical to ask two questions: one, can bodies be changed so that they transmit and utilize the gravitational field to better advantage: two, what definite landmarks indicate that this has been accomplished?

The answer to the first question is purely operational. It is possible to change the alignment of the body blocks. Evidence of this can be seen in the contour (profile) photographs of hundreds of people who have experienced this technique. In an unbelievably short time the gravity line can be established in a more normal position. The photographs which follow this article show the type of change in average bodies after ten hours of work, done, if necessary, in three weeks or less. The methods used in the earlier parts of this system are largely manipulative in character. A body altered in this fashion shows not only a modification in static contour, but moves dynamically in a very different pattern. Actually the original manipulation in this program is purely for the purpose of removing restrictions so that the body can move in accordance with its anatomical structure. Once the body knows its appropriate movement, manipulation becomes superfluous. Much of the change, particularly in children, is spontaneous. At times, however, the individual needs to become aware of the different patterns which require fostering. Often such a person has been taught deliberately that some particular stance, usually a rigid caricature of good posture, is "right" and he maintains it at a considerable cost in body tension, until he becomes aware of its limitations. This rigidity may come from the assumption that posture is primarily static. Nothing could be further from the truth. The word *posture* in its fullest sense implies a dynamic interrelation of body parts in space such that at all times and in all conditions a free interplay exists and is at work in support of the body economy. Inherent in this concept is the recognition that gravity is a positive and not a negative force.

Laboratory testing has been done in an effort to determine the depth of metabolic shift which accompanies alterations in contour such as are recorded in the photographs. Extensive changes are apparent both in blood and urine. They have been followed in detail by R. G. Taylor of Kansas City, Missouri. Such analyses have shown that all basic structural change, induced by these methods find immediate expression in the chemistry of the body. Even the differences resulting from a single hour of work show consistent alteration in blood and/or urine constituents. Naturally the ten-hour programme which brings about a permanent postural improvement shows a more predictable and more stable alteration in chemistry. Determinations taken from samples at the beginning, middle and end of the ten-hour series have been made in thirty cases. In addition to the routine urine tests, blood counts, stool cultures, etc., many types of indices have been used: blood cholesterol, blood enzymes, redox potential, protein-bound iodine, and various proteins, including the albumin-globulin ratio. All of them told the story of an immediate and lasting shift in the homeostatic equilibrium.

Similar evidence is apparent in records of cardiac function. Graphic tracings were made with the Cameron Heartometer, a machine widely used for evaluating physical fitness. This device measures circulatory pressures, not electrical impulses, and has been used as a basic tool in the Physical Fitness programmes sponsored by the University of Illinois. Heartometer measurements indicate the condition of the peripheral circulations, as well as the pulse rate,

systolic and diastolic blood and pulse pressures; the rhythms of the heart, the time relation between systole and diastole; in other words, the relative periods of muscular contraction and relaxation, with any arhythmias present. As could have been foreseen, all indices showed consistent appropriate changes.

For the individual undergoing a programme of Structural Integration, such records only verify his own subjective awareness. Consciousness of himself tells him that he is feeling "lighter" as though he weighed less. Sometimes he merely says he is feeling "better" although he often fails to put into words his recognition of his greater awareness of himself. Invariably he is conscious that he is turning out a good deal more work with less expenditure of effort. Sometimes he analyses this ease and realizes that it is due to a different pattern in his movements. He notes a new suppleness coming from a different use of knees, ankles, hips and arms. As he catches sight of himself in a mirror he is pleased with the unexpected grace and distinction of his movements. Sometimes he is aware, too, that his relations with people, his family and friends, have shown improvement, or that he is handling the situations which arise in his affairs with greater ease. Sometimes he himself is not conscious of this new psychological aptitude, but the practitioner who has helped to bring it about hears echoes of it from his associates. Of course, in that he has more energy available, some psychological improvement could certainly be expected. At times the man himself realizes that his ability to deal with new and novel situations in particular is better. However, the unexpected degree of attitudinal change, which can be verified through accepted psychological tests could not have been anticipated. A certain amount of such testing has been done on a few subjects and shows invariable improvement in attitudes, sometimes quite basic change. Such records, while significant, are not numerous enough to report at this time.

Particularly interesting is the change in the posture of the man's head. As the body balances, a new relationship of head to shoulders, to spine and therefore to earth and the earth's field, becomes possible. Outwardly one sees this defined by the line bisecting the external ear. When the head is balanced this shows as a vertical. Similarly a line bisecting one eye, through the canthii, also bisects the other and, if it is extended, is very apparently a horizontal. In random bodies, this description does not fit the observed situation. Here one eye is frequently deeper than the other, or by virtue of the tilt of the head, a line bisecting the two eyes forms a greater or lesser angle with the horizon. Certainly it is not parallel to it. After processing the eyes look straight ahead and seem to have a new integrity, as well as a new understanding in relation to the horizontal. In fact the changes allow the muscles of the eye to perform more effectively and permit of their better use as a visual organ. Frequently an improvement in vision does occur. However, neither the vertical alignment of the ear, nor the horizontal line defining the eyes, is as significant as the free movement of the head in turning and nodding, etc. Muscularly speaking this occurs because a different integration of pattern has taken place. The head is no longer controlled by the muscles which attach superficially to shoulders or clavicle, the sternocleidomastoideus, etc.; its rotation is now accomplished by deeper

muscles nearer the spinal vertebrae, splenius capitus, etc. The individual himself feels this freedom as a great personal satisfaction. The objective onlooker sees that there is something different, more impressive about this man. He is not quite as other men. A good observer sees that with any movement, his spine lengthens slightly, granting an effortless and unconscious grace. All movement, even that of breath, shows freedom, ease and uplift.

This has led us to an operational answer to our question, "What are the hallmarks of a body worthy of the name integrated". Looking at this body whose symmetry and lightness tell of a different status, one is surprised at the curious clarity of definition with which it relates itself to the basic planes of 3-dimensional space. The lines which define it are not anatomical, of course, but have a functional reality which is striking. Thus the gravity line, with its significant head segment, marked by the position of the ear, is, of course, vertical. A horizontal line defines the posture of the arms, for the elbows, in the balanced body, are carried so that their points, the olecranon processes, are away from the torso, and at the most lateral position. All balanced arm motion starts with movement initiated from this point of the elbow; average arm use, on the other hand, may originate in flexion of biceps, triceps, deltoid or the forearm flexors. By initiating the movement in the elbow, it is integrated with the large trunk muscles through a balanced response of pectorals and latissimus dorsi. This type of response insures that the heavy work of the shoulder girdle can be accomplished primarily by the large muscles which are obviously adapted to the task.

The work which is the proper function of the legs, the supporting and transporting of the body weight, can also be transferred to better adapted trunk muscles. Here the balance to be established is between the iliopsoas and its gluteal antagonists. This arrangement depends on the possibility that the knee, in walking, progresses, in a straight line. Any other manner of walking prevents psoas-gluteal co-ordination. Functioning in this more efficient way, it looks as though the knees followed two parallel tracks, straight forward. It is these lines in their precise definition, which give balanced bodies their beauty and distinction of movement. Particularly it is the vertical, which permits the head to initiate all motion by a very slight extension of the spine upward. The possibility of moving in these patterns gives speed and co-ordination. The moving body thus defined seems light and weightless. The flesh, to the touch, has a very different, resilient, more refined texture.

From these observations emerge a new set of concepts, for obviously these bodies we have been describing are offering other criteria of health, vitality and adaptability. Strength, in this context, equates with resilience not with the outmoded, over muscled, relatively immobile heroes of the football field or the prize ring. These muscle-bound idols of an earlier generation were already past their prime at the age of thirty. The demands and privileges of our day require that we maintain our ability to adapt to a rapidly changing world, through many more years than were allotted to our forebears.

It seems particularly significant that the factors capable of establishing these

far-reaching changes in the lives and the outlook of men seem so tenuous, so subtle. This subtlety emphasizes that an understanding of the integrative factor in man implies an awareness of the vital urgency of *relationship*. It is through the creation of appropriate *relationship* in three dimensional space that a man may be freed to a higher and more truly human functioning. It therefore becomes imperative that not only must the effect of gravity be studied, but that the structural relations in man be understood in terms of gravity. In this way man will call upon the earth to give him stature, grace and versatility befitting his new knowledge. In short, the earth is the integrating factor which offers him a more human use of his human being.

Finally, is it necessary to define a boundary for the area termed "human"? Or is it an open system? Is there a human and a supra-human, in the words of St. Paul, a natural man and a spiritual man? Or, if consciousness is evolving" and there seems evidence in support of this theory, may it not be possible that our concept of "human" and what it connotes may also be undergoing an evolutionary expansion ? May it not even be likely that more highly evolved humans must appear, to recognize and function from this newer concept, before this question can be answered ?

Meanwhile, can we, or need we, measure psychic being, ? Many students have felt that its most realistic index lies in the sensitivity of the individual, his awareness of the forces surrounding him. They feel that the secret of "intuition" lies in the ability to perceive that which is too fine for the average perception. On such a premise, it would seem unlikely that random, makeshift instruments can't offer adequate expression to an evolving psychic force. Rather it would seem logical that a more potent energy would be unable to function until finer, more perceptive instruments are available, both as tools and as housing. It should be emphasized here that this is not a plea for the type of training which builds coarser, thicker- or heavier structures. In actual fact, working with specified individuals has made it very apparent that the thickened, more stolid physical bodies interpose barriers to awareness ; that the perception of the individual seems to be caught and held in the deteriorated mesh of the non-elastic tissue. His attention seems to be trapped within himself, and his awareness minimized. Our experimental results clearly suggest that the release of such masses permits the emergence of a more sensitive being.

Ancient mystery schools apparently understood this relation. There seems to be evidence that among their teachers were men expert in refining the body for the express purpose of furthering individual psychic progression. In some areas remnants of this still survive, witness the branch of Yoga sometimes misnamed "Hatha". Some sort of evocation, a "calling out" of the forces of the physical body seems to be a first step in the consistent, conscious effort toward individual kinetic progression. A technique fostering the expansion of the individual, but starting with the material which is peculiarly his at any given point, his body, as it is at that moment in time, seems to be a reasonable point of departure, and a logical progression, even though too pedestrian to appeal to the typical Science Fiction mentality.

Early in any such attempt to perceive or experience his greater environment, the man is forced into realizing his relationship to that ubiquitous energy, the field of his environmental Mother, the Earth. He can, on the one hand, choose to ignore it as insignificant, and of no importance to the development of that very important aspect, with which he likes to identify himself, his mind. If this is the choice he makes, he then inevitably finds himself involved in many sorts of rationalizations "explaining" his subsequent physical degeneration, and his inability to progress further. Alternatively, he may choose the satisfying experience of voluntarily organizing his physical body in the patterns of balance demanded by Earth. In so doing he can find his goals reinforced, and their fulfillment brought nearer. This is indeed a first, and a significant stepping stone to a larger freedom.

Gravity IPR (#)