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Author(s): WM. E. RITTER

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IS MAN A RATIONAL ANIMAL?

BY WM. E. RITTER

University of California

Most litterateurs of today and a majority of the rank-and-file appear to be ready with an emphatic "No" in answer to the question. They claim that the "New Psychology" (which one does not seem very important) proves this. Moreover they accept it with less hesitation as it corresponds with their personal inclinations. For who does not like to *feel* better than he likes to *think*—think, I mean, in the sense of solving hard problems in geometry or budget-making? But my answer is the opposite of this. Man is a rational animal. Strange as it may seem, this answer I reach primarily as a student of animals generally and only secondarily as a student of human animals. Comparative studies in many parts of the zoological realm lead me to see

¹ Read and discussed at a joint seminar of the departments of psychology and zoology of the University of California, April 3, 1930; and revised in the light of this discussion. The following introductory remarks were made by the speaker:

According to the Platonist-Cartesian-Kantian theory of life biology is the science of the bodies of living beings while psychology is the science of their minds. This theory makes Life a "house divided against itself." What psychology has suffered from a theory of bodiless minds is not for me to say. What biology has suffered from a theory of mindless bodies I could discourse on long and, I think, convincingly. It would be a fine thing, it seems to me, if this joint meeting of psychologists and zoologists might be the first of many similar meetings to the end of replacing the divided house theory of life by a united house theory. This might result finally, for our own University at least, in a philosophy of life symbolized by the fact that nearly all the University departments devoted to living nature are now housed together in this magnificent building, conspicuously labeled *The Life Sciences*.

that in conformity with the general principles of taxonomic biology man must accept being classed as rational whether he likes it or not.

What I want to show is that the theory of man's non-rationality is equivalent to the theory that his brain with its specially developed cerebral cortex is functionally meaningless; that he is not bipedal and erect in any special sense; and that his fore limbs are not particularly free, tactile, and prehensile. Or the logical consequence of the theory may be modified to the extent of saying that although these characters of man are undeniable, they are purely structural and of no special consequence so far as his behavior is concerned. The reasoning that because biology has proved beyond question man's animal nature, therefore man is "nothing but" another animal has gained its great vogue largely, I believe, because biologists have failed to stand pat on some of their best established facts and principles. The facts and principles specially referred to are those involved in description, naming, and classification.

THE IMPORTANCE OF THE COMPARATIVE METHOD

The comparative method has played an important and honorable part in the history of biology. Of late it has lost much of its prestige through the advent of other methods. Notably experimental and quantitative methods have come into great and richly deserved favor. It is however of the utmost importance for solid achievement in any branch of natural science to recognize that no one method will do for investigating all the phenomena of nature and that all these phenomena must be investigated. That is, all phenomena must be investigated if the goal for natural knowledge is that finally it shall become as nearly complete as possible.

No natural scientist has ever contended that it is possible to make any headway in the study of nature without description and classification. And these imply comparison as inevitably as the right hand implies the left.

The importance of the periodic system of the chemical elements and the renewed interest in it awakened by recent discoveries on atomic structure and action well illustrate the fundamentality of classification in this realm of inanimate nature. But all other realms illustrate it quite as well. Rocks and stars have to be classified as well as do chemical elements and grasses.

The great place taxonomy has in biology as compared with what it has in chemistry, astronomy, or any other science of not-living

nature is due chiefly to the fact that the objects of living nature are so much vaster in number, varied in form and action, intimately connected together, and obtrusively present to us humans, that classification plays so much larger a part in our knowledge of the living than of the not-living realm.

An exceedingly unfortunate attitude towards classification has been assumed of late by many biologists from the circumstance that the task of collecting, describing and classifying the plants and animals of the earth has been largely done, in a reconnaissance way. This has permitted the center of interest in research to pass to other subjects. So far this is natural and good. But along with the passage of interest in taxonomy to other subjects there has gone a deplorable tendency to look upon this subject as out of date and relatively unimportant. There has been failure to discriminate between the *work* of description and classification and the *principles* of description and classification. Great emphasis has been placed on, for instance, the analysis and causal explanation of phenomena, these having been largely ignored by earlier taxonomists. Again this is natural and good so far. To the extent, however, that analysis and explanation have been regarded not as supplementing, but as supplanting description and classification, the most basic principles of objective reality and natural knowledge have been violated.

G. K. Chesterton's blistering criticism ("The Inefficiency of Science," *North American Review*, Nov., 1929) appears to hinge on the point here made. His artist's "instinct" seems to have sensed the deplorable fact that so many present-day students of nature are refusing to admit any knowledge to be truly scientific except such as consists of deductions (largely mathematical) from relatively few sense data. In other words, Chesterton seems to suppose that such students have really succeeded in their efforts to exclude from the Temple of Science all those branches of natural knowledge which must, from the necessities of the phenomena dealt with, rely greatly on induction, i.e. on description, definition and classification.

THE MORPHOLOGICAL EVIDENCE OF MAN'S RATIONALITY

What has all this to do with the question of man's rationality? Very much. It brings us to the real point. The question is as to whether we men shall use our heads as *human* animals or merely as *brute* animals use theirs. It is not a question of how much rationality we possess, but of how we use what we do possess. According to the

principles of biological classification, to contend that man is not a rational animal because many individuals fail much of the time to use their apparatus of rationality is equivalent to contending that he is not an upright-postured animal because nearly all individuals lie down or sit down much of the time.

Another form of statement of our question is: Was Linnaeus justified in giving man the species name, *sapiens*, if he intended that name to be really descriptive? The more vehement of the anti-rationalists do not hesitate to pronounce the great systematizer quite wrong in this. We read: "Linnaeus . . . has called mankind . . . *Homo Sapiens*—Wise Man. But this praise is manifestly unjust. For man heaps up such abundant examples of extraordinary folly that, to conform with the reality of things, we should call him the exact opposite: *Homo Stultus*—Stupid Man" (*Idiot Man or The Follies of Mankind* ('L'homme stupide') by Charles Richet).

Generally speaking, those who think it necessary to revise downward man's conception of himself grant that on purely morphological grounds he is entitled to the rather widely removed place in the zoological system taxonomists allow him. Linnaeus, as is well known, recognized man as constituting a single genus, *Homo*, in the family *Hominidae* of the order *Primates*. This makes him as different from the great apes, his nearest animal kin, as a sheep is different from a pig or a horse from an elephant. So even on this basis to dispose of man as "nothing but" another animal is a glaring instance of shoddy thought and talk from the standpoint of sound zoology.

But it is when due attention is given to what man's morphological peculiarities imply concerning the part played by these in his "struggle for existence" that the wretched consequences of such thinking and talking come to view. People who have little or no biological education (the vast majority, more's the pity) cannot reasonably be expected to recognize these logical fallacies and follies. But professional zoologists can hardly escape noticing them and attempting some sort of logical readjustment relative to them. Now those zoologists who share the violent hostility to "anthropomorphism" that came (rather justifiably) into biology with the modern demonstration of man's animal nature, are likely to try to justify the fallacies. How explain man's upright posture and the resultant freedom of his fore-limbs for wide and efficient grasping if he is "nothing but" another animal, since other animals are but slightly possessed of these characteristics? Still more difficult to explain are the most characteristic parts of

man's brain. What under the sun can be the meaning of the chief part of his cerebrum? For it is now known with certainty that this is mainly devoted to processes heretofore called rational. Does it mean that these processes ought to be given some other name? But would naming them something else make them different from what they really are?

Some students of morphological zoology and portions of functional zoology have sensed these logical difficulties and have suggested various ways of escaping them. One suggestion is that the main part of the human brain is not essential to man's real nature. The cerebrum may be a kind of superfluity—perhaps something like the hump on a camel's back or the quirl on a pig's tail. Or possibly it is a sort of non-malignant hereditary tumor or wen. Although suggestions of this sort have been made by serious minded zoologists, they perhaps were made only half-seriously and need not be treated very seriously.

BEHAVIORISM AND THE CEREBRAL CORTEX

Another suggestion which has the merit of being less fantastic is that so little is really known about the function of the cerebral hemispheres that they may as well be ignored in our efforts at a scientific interpretation of our behavior. This suggestion comes with sufficient seriousness to deserve real consideration. The tendency of extreme behavioristic psychology to minimize the importance of the cerebral cortex as a consequence of its proposal to throw consciousness overboard has not attracted anything like the attention it should. Early in John B. Watson's elevation to the leadership of Behaviorism his writings began to show this tendency (in his *Psychology*, for example). The tendency has gone on till in his latest full-rounded doctrinal work (*Behaviorism*, The People's Institute Publishing Co., 1924) the cerebral hemispheres have almost reached the vanishing point and the whole brain figures as a mere part of the spinal cord. In *Behaviorism* (the book) and, by inference, in behaviorism, the school of psychology, Watson takes notice of the accusation that behaviorists do not show enough respect for the central nervous system. One of his statements is this: "For behaviorists the nervous system is, 1st, a part of the body—no more mysterious than muscles and glands: 2nd, a specialized body mechanism that enables its possessor to react more quickly and in a more integrated way with muscles or glands when acted upon by a given stimulus than would be the case if no nervous system were present" (p. 38).

The first part of this statement I endorse entirely and gladly. The second part I endorse with equal whole-heartedness as far as it goes. The proof is conclusive that the nervous system both quickens action and integrates action. But it has another role not mentioned. It "enables its possessor" (note Watson's language) to use its muscles and glands more effectively *to its own welfare* than it otherwise could use them. In other words the nervous system is the animal organism's morphological system that enables it to act adaptively in the highest measure. And the culminating part of this system is the cerebral cortex of *Homo sapiens*.

Consequently if a system of interpreting animal organisms is adopted which minimizes the importance of the central nervous system, it does violence to the best principles of both morphology and physiology and cuts the very heart out of the conception of organic wholeness.

So we look with keen interest to see how the nervous system is treated in *Behaviorism*. We find there a total of eight figures introduced to aid the presentation. Of these one only touches the "central" part of the system. This figure is of a section, diagrammatic to the limit, of the spinal cord introduced to illustrate a point about the reflex arc. As for the cerebral cortex the nearest approach to a mention of it in the text (I hope I have not overlooked any other) is the statement, page 92: "Infants born without cerebral hemispheres exhibit" the same reflexes that normal ones do. It is probably not justifiable to infer from the treatment of the nervous system in this book that orthodox behaviorism would hold the view that men with no cerebral hemispheres would be as well off as those having them, could all the rest of the system be perfect. But in all sobriety one may question whether the treatment justifies the opposite view.

So much in illustration of the queer ways men can use their reason to justify themselves in being unreasonable.

WHAT IS INTELLIGENCE?

Now let us come to the task of comparing the activities of animals generally to discover the difference, if there is any, between the part played by the activities of men and those of all other animals toward solving their life problems.

My field studies on the activities of animals in nature bring me in contact with many people, farmers, foresters, vacationists, and so

on. These are often curious as to what I am doing. When I call their attention to striking instances of adaptive action by many creatures, no question is more common than "Is it intelligence?" As I make no claims as an expert on intelligence, these and similar questions have led me to "read up" somewhat extensively on what experts have written on the subject. Finding to my surprise that almost every expert consulted, especially if he ranks high as an expert, disagrees rather sharply with all other experts, I have been thrown back on my own resources for defining intelligence. Or, to speak more accurately, I have seemed driven to devising some kind of general statement about what I observe animals doing that brings out the question just quoted, but which none of the expert definitions really cover. Why then should I not concoct a definition of intelligence to meet the needs of zoology, since no definition seems to exist that really meets the needs of either psychology or zoology?

Accordingly here you have the results of my efforts: Intelligence is that attribute of which some animal species have become possessed through the long, hard course of evolution, in virtue of which the individuals may avoid doing fool things if they really desire and really try to avoid them.

Perhaps the injection of such a phrase as "fool things" into the discussion will strike you as a bit of facetiousness. Does it seem to mar the proper somberness of the occasion? I hope not. Please recall that the genius of the Platonic philosophy has been characterized (I think truly) as "free and facetious."

The possible charge of facetiousness against my definition troubles me less than the probable charge of ambiguity. But ambiguous it can hardly be to those who must have noticed what men do at times and may have noticed what the lower animals are apt to do. Especially should the questionable phrase be unambiguous for those who think critically on how the things done as hinted affect the wellbeing of the actors themselves and their kind. Furthermore removal of ambiguity may be materially helped by the cooperation of a good sense of humor with critical thinking on the subject. A strong case could be made for the hypothesis that the whole gamut of human action included in the conception of "from the sublime to the ridiculous" sends its roots down to the very bottom of man's nature as an animal organism. Surely all work-and-play or play-and-work can be shown to be rooted that deeply.

"FOOL THINGS" THAT ANIMALS DO

Anyhow it is no meaningless coincidence that the prince of American humorists should have been one of the most deeply-truthful observers of animal activities generally, human and subhuman alike. I am already on record² in defence of Mark Twain's competency as both observer and interpreter of the performances of animals. My supplementation of his account of the way ants do things ought to be superfluous in view of the many other confirmations, by professionals, of his testimony. But somehow the facts do not seem to impress experts on intelligence. The funny side of the performances almost anybody can see but their serious side appears to escape almost everybody. That this side did not wholly escape the man, S. L. Clemens, is pretty certain from indirect evidence furnished by his life and writings.

Such a mass of "fool things" done by animals is presented in the book just referred to that it seems unlikely that just more would strengthen the evidence. Accordingly the few additional facts I give here I give with the hope that their setting and mode of using may bring to light more of what I take to be their deeper meaning.

Mark Twain's "Baker's Blue-jay Yarn" in *A Tramp Abroad* I hold to be transformed from good story telling into good zoology by my studies and publications on the operations of the California woodpecker.³ In the Quarterly Review article I tell, as one example of "fool things" done by the birds, about their making many little holes through the siding shakes of a cottage, into which holes they put acorns; but as the holes open into a deep space behind the shakes

² *The Natural History of Our Conduct*, p. 119, Wm. E. Ritter with the collaboration of Edna W. Bailey.

³ Besides what I have said about these birds in the book above referred to and earlier publications, the following later publications may be noted: "An untilled field for a revised kind of research in zoology," *The Condor*, Vol. XXXI, pp. 160-166, July, 1929. "The nutritive activities of the California woodpecker" (Balansophyra formicivora), *The Quarterly Review of Biology*, Vol. IV, No. 4, pp. 455-483 1929.

"Tom Sawyer" and "Huckleberry Finn" have given Mark Twain considerable distinction as a human psychologist. I submit that any one who will ponder certain of his jokeless writings along side various of the animal yarns, notably "Eccentricity of the Ant," must allow that not merely Mark Twain but C. L. Clemens deserves serious attention as a psychobiologist. The ideas of "Self," of man's "Interior Monarch," of "Outside Influence," and of "Training" set forth in the hundred-page dialogue, "What is Man?" come nearer the central truth of human nature than one sometimes finds in a thousand-page professional treatise on philosophy or pedagogy.

the inserted nuts drop into this and are a dead loss to the birds. A recent visit to this cottage happened to be on the day that workmen were stripping off the much be-punctured shakes preparatory to mending the damage done by the birds. The quantities of old, insect-destroyed or otherwise meatless acorns that were rattling to the ground as the shakes were torn away was a ludicrously impressive sight, sure enough. There were certainly thousands of them. After scooping up one market bag full for my own collections and another for Professor J. Arthur Thomson, who was my honored guest on this occasion, and after selecting samples for us both of the old, riddled shakes, we turned away eagerly questioning how such things can be. How comes it that the very same creatures can perform acts that look so much like intelligence as do many of the storing activities of these woodpeckers, but also acts which look so absurd as does this particular performance? The acorn crop in this locality being abundant, holes in red-wood shakes being easily made, and the birds having plenty of time one may, perhaps, question the justification of calling the action "foolish," "absurd" or by any other derogatory term. It may be legitimate as play or something else the significance of which we do not recognize. But anyway quantities of acorns are stored, nominally for food but practically where they can serve no such end. As to its main purpose this particular performance is certainly futile. Since, however, there is little or no evidence that the birds suffer inconvenience from the loss of the acorns, whether or not one regards the performance as ridiculous—laughable—would seem to depend on what sort of things excite his risibles.

SELF DESTRUCTIVE ACTIVITIES OF ANIMALS

But now let us notice another activity by these very same birds. In my Quarterly Review article I tell of the killing by a neighboring orchardist one summer of a large part of the whole settlement. This was done because the birds were playing havoc with his crop of almonds. Most of the birds were shot in the very act of taking the fruit, as I can testify from having seen many decaying carcasses under the trees.

The question of whether the orchardist was justified in thus breaking the bird protection law to save his crop is not here raised. Rather the question is, whether the birds were justified in preying on the crop. Were they under such straits for food that it was almonds or starvation? Not at all. At the very time they were committing

depredations on the almonds there were quantities of unused acorns they themselves had stored in oak trees only a few hundred yards away. Nor were these acorns inaccessible as were those lost in the cottage.

The bald fact is that large numbers of the birds paid the death penalty for feasting on almonds when by eating acorns of their own providing they would have been free from such a fate. Quite likely young almonds, full-grown but not yet hard and dry, were a welcome change from the usual diet of old dry acorns. But was the difference enough to justify the risk of death? It is so obvious that birds do not act as though they think about their welfare in this fashion, that it seems to many persons unnecessary or even unfair to raise such questions. But why not raise such questions? Indeed how avoid raising them if we would be consistent? The very concepts of thought, of reason, of intelligence appertain basically to the human animal alone. They were originated by men for application to men. Consequently if we see occasion for applying them to other creatures at all, how can we consistently neglect to go all the way in the application? If we would pronounce men to be acting with poor judgment, bad reasoning, small intelligence, "foolishly," who should forfeit their lives under similar conditions, how avoid the same verdict for the woodpeckers? It is no less true for science than for common experience that "it is a poor rule that will not work both ways." The question of whether we shall or shall not be "anthropomorphic" is not raised. What is insisted on is that if we choose to be anthropomorphic at all we shall be so consistently. If we call acts of brute animals intelligent because they resemble acts of human animals which we call by that name, then we are logically bound to apply to the acts of brute animals whatever terms we apply to the acts of human animals which we regard as not intelligent.

In such cases as just narrated, badly directed action is not merely foolish; it is tragic. And a great point is that it is not exceptional. As to type it is common among all classes of animals. Accept in their fullness the principles of biological classification, and apply the criteria of the wisest and best human action in a systematic study of natural activities in the whole animal world as affecting the well-being of the acting creatures themselves and their kindred, and you cannot help seeing innumerable performances which grade from useful or harmless play all the way to laborious work that may be extremely wasteful and destructive even to the lives of the actors.

EXCESS IN ACTIVITY

The well-nigh ceaseless running and jumping; falling, rolling, and tumbling; and the amusing pranks of the young of practically all domestic mammals and of healthy children are as good illustrations as one needs of the playful aspect of activity. But even here the constant tendency to excess, often highly injurious, in the play of children, is especially to be noted. For of all the varieties of "foolishness" to which animal activity tends, probably no other has had a more important part in the kinetic aspect of evolution than excessiveness.

This general tendency to excessive action shows itself most glaringly perhaps in reproduction. At least the "geometric ratio of increase" of organisms, utilized by Mr. Darwin as one of the corner stones of his theory of natural selection, has given this aspect of the tendency its greatest theoretical prominence.

As to activity in the more usual sense the tendency to excess shows itself nowhere perhaps more strikingly than in connection with food, especially in such animals as have become collectors, transporters and storsers of their food materials. Although a systematic investigation of the subject seems never to have been made, apparently all species that do these things are ever liable to do "fool things." This liability is not more striking in any direction than that of going further than is necessary to accomplish the original purpose of the action in case the objects toward which the action is directed happen to be abundant. No animal below man seems to have any other inhibitory power over its actions than satiety and fatigue.

All of us animals, brute and human alike, are in the very nature of our ability to act at all, constantly liable to do the wrong things and overdo the right things. If I am an earthworm my responses to moisture, light, temperature and other stimuli expose me to a variety of dangers, including that of being run over and crushed to death by creatures much larger, heavier and more active than I am (*Natural History of Our Conduct*, p. 184). If I am a harvester ant and depend on collecting and carrying home seeds of various plants, I am everlastingly liable to collect objects which, though somewhat resembling seeds, have not the slightest food value. Furthermore often when successful in getting useful seeds I am boggled into carrying them miles where inches were entirely sufficient (*Nat. Hist.*, p. 120). Nor am I by any means free from liability to foolish, even tragically foolish, acts when I have evolved to the dignity of a vertebrate. For as

fish, salamander, or frog, some of my performances in feeding and in mating reach the climax of bestiality, understanding this term at its worst (*Nat. Hist.*, pp. 165-169).

The varieties of foolishness to which my actions are liable when on the whole they have evolved to the grade of wisdom represented by the California woodpecker, I have observed in great particularity. The usefulness of storage-hole pecking carried to uselessness by pecking many holes in which nothing is ever stored or pecking new holes when plenty of perfectly good old ones are available; the storing of acorns entirely beyond the reach of the storer; the storing of pebbles and other useless objects—these are only illustrations of a general principle.

The mammalian state having been attained, it would seem that doing fool things should be out-grown, evolved beyond. But not so. If I am a beaver, a creature commonly held to be industrially classifiable as an engineer, I am still liable to carry my usually wise activities to foolishness quite as arrant as while I am an ant or mud-dauber wasp or woodpecker or woodrat. For what could be more ludicrously futile than performing the acts of dam-building in a pool of still water or of gnawing down an old dry tree to get green bark and twigs for food? (Unpublished notes of mine on beaver work contain observations of both these things.) But beavers may surpass woodpeckers in the tragic as well as in the harmlessly foolish character of their performances. For proportionate to their efficiency in dam building and tree cutting is their liability to push these activities to serious self-injury. Where beavers are near neighbors to men it is apparently usual for them to become so destructive of men's belongings with no essential advantage to the animals as to bring upon themselves the full force of man's ability to inflict the death penalty on anybody that he regards as seriously injurious to him (*N. H. C.*, pp. 156-158 and 220).

WHY IS MAN THE DOMINANT SPECIES?

This last statement is illustrative of a principle of great importance for this discussion. The principle may be indicated by asking the question, How comes it that the animal species, *Homo sapiens*, has been and is so destructive to all other species with which he comes into competition? Man's "commercial greed"; his inordinately developed "hunting instinct"; his "heartlessness" and disregard for the "rights" of the inferior creatures; his possession of fire-arms and deadly contrivances of various kinds—such are the familiar answers to the question.

Much of truth as there is in these answers, from the standpoint of a rigorous taxonomic zoology, they miss the main point. They leave untouched the question of what there is in the morphological difference between the human and other species that gives the human species the competitive dominance implied by the answers? To this only one answer is possible: man's nervous system, his cerebral hemispheres especially, and the chief structural attributes coordinated with this, namely his erect posture with his consequent free and wonderfully efficient fore-limbs, tell this part of the story fully.

But, as previously indicated, this, the structural side of the story, is simplicity itself as compared with the other, the activational side.

When will the Delphic oracle's injunction "Know thyself" have been so far obeyed by man that he shall have become the beneficiary in the fullest possible measure of his attributes as just noticed!

The query "Is it intelligence?" previously noted as a common response to my demonstrations of the strikingly adaptive activities of woodpeckers and other creatures has a counterpart quite as common and quite as significant. When I go on and demonstrate the "fool things" which the same creatures do, the response is fully as ready, "Why, human beings act just that way." This response is particularly apt to come when such overdoing of things as food-storing animals frequently exhibit, is pointed out, and as is exemplified by the common remark about birds and mammals which become pests of farm crops, that they "destroy more than they eat."

Replying to this I try to make the point that all human beings act much that way *part* of the time, that some act much that way *most* of the time, but that a few *rarely* act that way. This along with other facts, proves, I go on to say, that the human animal is really very different from any sub-human animal in that it is *possible* for him to avoid "acting that way." But my efforts have never succeeded very well in making this point. I am, consequently, going to try again, now, though very briefly.

The lower animals do "fool things" because they can't help it. They have no mechanism for avoiding it. Said in twenty-three words we have: *No animal below man has a cerebral cortex or any similar structure by the use of which he can avoid doing fool things.* His entire mechanism is such as to enable him, in his own specific way, to do "wise things" as a rule (i.e. act in accordance with the welfare of himself or of his kindred, one or both). But if "the rule" of his acting changes a bit, since he has little or no equipment for changing his

action correspondingly, his normally wise acts become foolish, even tragic. It is first and foremost a problem of individual equipment for guiding individual action in behalf of individual welfare. But the individual is always a member of a species, or kind. He can neither come into existence nor reproduce himself under any other conditions.

So it is that with the species, *Homo sapiens*, the problem of taxonomic zoology merges into and fuses with the ancient human problem of choice and freedom of action. Zoologically viewed it is beyond question that the human animal far surpasses all other animals in its equipment for controlling its actions to its own good. The most definitive of man's morphological attributes as above noticed makes doubt on this aspect of the matter impossible.

But since in its very nature such control involves choice—selection—as between alternative possibilities of action in particular instances, the real problem is as to how far man lives by his most defining attributes.

THE TWO ASPECTS OF INTELLIGENCE

It turns out then that my definition of intelligence is only the negative side of what is really aimed at. "Fool things" are such only as the obverse of "wise things." And "wise" appears to be the word most in favor with moralists of the Anglo-Saxon speech for designating things which, psychozoologically considered, are in a high degree adaptive; that is, are truly advantageous to the acting individuals or their kind, one or both. Justification for this negative way of defining intelligence lies in the enormous difficulty there is in deciding what *not* to do in many of the most crucial situations of human life.

Linguistically my definition seems to differ mainly from current definitions in the meaning attached to the basic part of the ancestral word, *intellectus*. According to the lexicons the primary meaning of the Latin verb *legere* is *to gather, to collect, to put together*. But an accessory meaning is *to choose, to select, to pick out*, and it is clear from the illustrations that the choosing referred to was on the basis primarily of what was supposedly good for man.

The prevailing efforts at defining intelligence seem to rest on the primary meaning of the original word. Mine on the other hand rests more on its accessory meaning. So far as I can see, the measurement of intelligence (which now seems to dominate interest in the subject with many psychologists) relates mainly or wholly to learning, that is to gathering or collecting, data. What use the learner makes of

the data seems not to figure much in the problem as these students treat it. Choice by the learner as to what shall be learned on the basis of the learner's own welfare seems to enter very little into the prevailing conception of learning. I do not find much serious attention given to the extent to which, as psychologically viewed, each individual's welfare is in his own hands. Self-responsibility in a truly vital sense is apparently assumed to be largely replaceable by parental, school, governmental, social and other forms of extraneous responsibility.

The fallacies that lurk in this assumption are too varied and subtle to be dealt with here. But they are largely amenable to analysis.

THE FREEDOM OF THE WILL

There is, however, a great realm of human experience into which the psychozoological problem merges and which is so unescapable and ever-present as to have been one of man's major problems throughout his entire cultural history. The problem referred to is none other than that familiarly known as the freedom of the will, or simply of Freedom. The whole vast round of man's activities on which his highest welfare depends and which has become more or less subject to personal control in each particular instance, we of the Anglo-Saxon world have generalized and named the Will. That is to say, essentially this must be the meaning of the word according to the standpoint of this essay, if it has any real meaning at all.

That man has a wide range of choice as to how he shall act in all the typical situations of life is as certain as are his definitive morphological characteristics by means of which he is able to act at all.

Man's real question is not as to whether his will is free, but as to how he uses the equipment for freedom he certainly possesses.

It looks as though this idea of "fool things" has about the same meaning that the ideas of "sin" and "wickedness" had in former days when men used these terms.

SOPHROSYNE

The ancient Greeks appear to have been the first to make a real start toward recognizing the great possibilities for man's good there are in his ability to regulate his actions and impulses by means of what we now know to be his cerebral hemispheres and their fundamentally related corporeal parts. Greek scholars and artists laid great store on this ability and had a name for it that has never become current in our language and seems to have no exact equivalent with us. The

name is *sophrosyne*. *Moderation* is the English word that corresponds to an important part of the meaning of the Greek word. But neither that nor any other single word of ours covers the whole of its meaning. "We may translate it," writes a highly competent student of Greek philosophy, "sobriety, moderation, discretion, temperance, sagacity, wisdom, self-mastery, modesty, chastity." (F. J. E. Woodbridge, *The Son of Apollo*, 158) "The thing it stood for," Woodbridge goes on to say, "was prized, for he who possessed that thing could be sure, and give others the assurance, that his mind was sound and himself safe except for the tricks of fortune."

If any one questions whether it is really worth while for men to try to regulate their acts by the distinctively human part of their brains, instead of letting them run on with little regulation beyond such as appertains to the woodpecker part of their brains, he may get light on the question by consulting some of the millions in this country who are today paying the penalty of over-activity or ill considered activity in the stock market, or in various of the industries, agriculture and the oil business, for instance, where overproduction is reaping, or is likely soon to reap, the harvest of its own sowing.

Much of modern life, particularly in business, and in sex affairs, appears to be based on the theory that the Greek idea of *sophrosyne* was a delusion and that man's cerebrum is a huge by-play of organic evolution.

We may now conclude with a summed-up answer to our initial question: "Is man a rational animal?" If the answer is given in the motif and temper implied by the form of the question, that answer must be "Yes, man is a rational animal." This must be the answer because man is so vastly more rational than is any other animal.

The meaning of both question and answer is contingent on the meaning of the word "rational."

According to the facts and conclusions we have sketched, if the term means anything at all it means in final analysis the ability of an animal organism to consciously guide its actions in accordance with the wellbeing of itself and its own kind.

