Original Articles.

THE CARNIVOROUS AND HERBIVOROUS TYPES IN MAN: A REPLY TO DR. HOOTON.

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THE writer being personally and solely responsible for the application of the words "carnivorous" and "herbivorous" as used to describe two very obvious types of human development, Treves²² having used these words only in connection with the lower animals, Dr. Hooton's recent article¹² in this JOURNAL takes on somewhat of a personal character.

Dr. Hooton objects, first, to the use of the term "herbivorous." If to Dr. Hooton's mind the word herbivorous conveys the idea of "grass eater" rather than vegetarian, it is suggested that he consult the Century Dictionary or some standard medical dictionary.

The terms carnivorous and herbivorous were chosen after due consideration to signify the two types which have been described as existing in the human, for two reasons: First, although not ultra-scientific, they are descriptive and call to most minds a definite mental picture of a complete organism; secondly, diet is about as near as we can get to fundamentals in the living, since without food we die, and it is more to variations in diet in the young than to any other one factor, except perhaps heredity, that type differences in the adult are due. It is obvious that the recognition of type is a means rather than an end, and equally obvious that recognition is far from infallible; but one cannot work much with type without more and more realizing that it is a valuable aid in the diagnosis and treatment of disease,—disease not as the anthropologist knows it upon the dusty bones of his averages, but as the medical man finds it in the living tissues of his individual patient.

Herein lies one of Dr. Hooton's fundamental misconceptions. If his paper is representative, the points of view of the anthropologist and the physician are irreconcilably at variance. The former is essentially a socialist, constantly engaged in reducing the individual to the one deadly level of a mediocre average for a race. This pessimistic and depressing method would deny the existence of a genius. Modern medicine, on the other hand, is constantly becoming more and more individualistic, hoping by the conservation of a genius to add occasionally to the progress of the mediocre mass with which anthropology appears chiefly to concern itself. The anthropological unit appears to be a race. The unit of type is the individual. Thus the study of type is at once more specialized and yet more broad than the study of anthropology. On the one hand, race and ancestry seem paramount. On the other, race and ancestry are of

only passing and theoretic interest. The concern of type is with the healthy or sick but living individual, within the race or of all races. The living patient is the problem of today, not of yesterday or of tomorrow. Whereas both types occur in every race, it is yet possible to compare individuals of a given type in several races.

Two practical illustrations of the application of observations upon type variations will perhaps suffice. The figures in both cases are from unpublished preliminary investigations, and quoted through the personal courtesy of Dr. Lewis,¹⁸ and Dr. Hodskins.¹¹

Dr. Lewis examined over 500 school children in Worcester. Their ages varied from 12 to 16, with the majority at 14. For the total number, disregarding race, the disposition of the types was in the proportion of two carnivores to one herbivore, as follows:*

Normal	10%
Herbivorous	30%
Carnivorous	60%

About 75% of these 500 boys belonged to but four races. This 75% was found to divide as follows:

Nationality	TYPE		
	Normal	Herbivorous	Carnivorous
American	5%	10%	20%
Swedish	1	7	8
Irish	1	4	8
Hebrew	1	2	6

Abbreviating carnivorous and herbivorous to C, and H, it will be seen that for the three races, American, Irish and Hebrew, leaving out the normals, the ratio is C:H::2:1; but the Swedish ratio is very nearly C:H::1:1. In other words, the fact that the Swedish ratio is very different from that of the first three races mentioned is lost sight of if one merely takes the total number of boys and uses the average thus obtained, which is C:H::2:1. This is entirely parallel to what happens when the anthropologist uses his "mean" for a given race. The variants on either side of the "mean" cease to exist.

The second example illustrates the use of type as applied to the study of a given disease, in this case regardless of race. Dr. Hodskins, at the Monson State Hospital, examined 115 epileptic children. In round numbers, about 55% were so-called normal, but on either side of this group there were found 5% H, and 40% C, or eight carnivores for every herbivore. This is certainly a strong leaning toward the carnivorous side of the scale, and supports my prediction to Dr. Hodskins that epilepsy, especially the idiopathic variety, would be found to occur largely among the carnivores. Additional support is gained by the study of the etiology in these cases, the majority of which were between 10 and 14 years of age. For convenience, the eight herbivores were grouped with the 60 normals, and then compared with the 47 carnivores, as follows:

* Note that only 10% of these 500 boys fall within the limits of the classical or text-book normal.

Etiology	Carnivorous	Normal
Idiopathic	22=50%	4= 5%
Indigestion	17=30%	7=10%
Organic (other)	8=20%	49=85%

No attempt is made to express the percentages with great accuracy, because there is certainly a possibility of error of 5% or so in the determination of type itself, at the present time. But even so, the figures are striking. For idiopathic epilepsy, the ratio is C10 : N1, for indigestion C3 : N1, but for all other organic causes the ratio is reversed to C1 : N4. In short, idiopathy and indigestion account for 80% of the carnivores, but for only 15% of the normals or herbivores. Conversely, various organic causes account for only 20% of the carnivores, but for 85% of the normal and herbivorous group. These observations are in line with a recent report¹⁷ showing 100% of ptoses and gastro-intestinal disturbances in a series of idiopathic epileptics. It will be observed that age is mentioned in both these examples. It has seemed almost too obvious that in considering type one must have in mind not only age (and also physiological age in children), but such self-evident factors as sex, height, nutrition and disease.

Dr. Hooton has elected to act the medical critic. I certainly should not venture to argue with him on subjects anthropological, but he has seen fit to deny the very existence of type. Since Dr. Hooton's attitude toward type is shared by others than himself, it seems necessary to give in some detail the support upon which rests the theorem of type. With its beginnings lost in antiquity, it found perhaps its first permanent though unconscious record in the drawings of the cave men, estimated as 25,000 years old. These artists¹⁵ always represented the women as corpulent, but the men as lithe, muscular and athletic. Much later, but yet 2,000 years ago, Asclepiades⁹ used the words "sthenic" and "asthenic" to distinguish contrasting bodily types, and Caesar¹⁶, shortly afterward, (200 years or so) remarked upon the mental qualities of the fat men who slept at night and of those other restless individuals with their "lean and hungry faces," whom he preferred* not to have too near him. In art one may contrast, for example, the ideals of female beauty portrayed by Botticelli and Rubens. Almost 300 years ago Spigelius¹⁰ had turned his attention to the length of the intestine in its relation to body length, and had recorded a ratio which in a general way holds good today. In 1881, Tarenetzky²¹ noted that certain diseases were most frequent with definite lengths of intestine, and two years ago Stern²⁰, for example, mentioned a considerable list of diseases which he found associated with the asthenic (carnivorous) and the sthenic (herbivorous) types; anyone who takes the trouble

can find a vast array of disconnected data bearing on the subject, which was written between these dates, and much more has appeared since 1914.

Dr. Hooton's second fundamental misconception is due to apparent ignorance of the existence of this cumulative mass of evidence, especially as it concerns two very vital phases of bodily activity in the living. I refer to the intestinal tract, and to the group of so-called ductless glands. The complaint is made that I have offered "no statistics proving a correlation between short intestines, high stature, and bodily thinness." In two of my previous papers may be found not only data from my own work,⁴ but, in the form of a bibliography⁵ of some five hundred titles, a small fragment of the evidence sought. A larger fragment has been easily collected in the form of a card index which already contains over 6,000 titles bearing upon various aspects of the problem. Familiarity with the activities and interactivities of the ductless glands is almost a *sine qua non* for the study of type, or for that matter, any other phase of modern medicine. Leaving entirely out of consideration my own work, Dr. Hooton can find by turning to only three^{3, 8, 18} of the many books upon this subject, at least 3,000 references of considerable interest. Were he better acquainted with this information, he might perhaps be less dogmatic in denying a possible correlation between type and sex. To put the value of studying medical literature in a nutshell, the following sentences from the introduction of one of the three books just referred to are quoted: "The present unsatisfactory condition of medicine is due to the fact that investigators do not avail themselves of the enormous array of solid data available, to ascertain the truth. Blinded by the fallacious idea that the worth of a contribution to our knowledge should be gauged solely by the new experiments and clinical observations it adds to those already available, they lose sight of the fact that such experiments and observations are but bricks and mortar out of which a coherent and truly useful medicine—one indeed worthy of ranking as a science—can be built."¹⁸

In addition to referring to preparation through study of the literature, it seems necessary to refer to the clinical and other preparation upon which is based the theorem of type. First, vacation and other travels have given opportunity for observation of the following peoples in their own lands: The Nascaupsee Indians and Esquimaux of northern Labrador, the natives of Newfoundland, Nova Scotia, New Brunswick and Prince Edward Island, Canadians east of Montreal, Americans from Eastport, Maine, to Washington, D. C., and from New York to San Francisco, the Irish, Welsh, and English, the French, Swiss and Italians, the Dutch and the Danes, the Germans, Austrians and Hungarians, the Egyptians and Arabs, na-

* Plutarch records the following as Caesar's original words: "..... As for those fat men and smooth-combed heads, I never reckon of them; but these pale-visaged and carrion lean people, I fear them most....." Shakespeare (Julius Caesar, Act I), in his later and more polite paraphrase of Plutarch has given a vivid description of the contrasting types.

tives of Ceylon, the Malay states and Java, of China and Japan and of Hawaii. This assortment of peoples is doubtless limited, but it contains representatives from the East and the West, and from the equator well northward toward the land of perpetual snow. Secondly, five years of study have led to present medical conclusions. Many of the larger clinical centres in this country and Europe have been visited, and during two years passed in Europe, particular attention was paid to post mortem work. A total of some 500 sections were examined, varying in age from the foetus of 12 cm. to the adult of 90 years or over. In addition, it has been a privilege to have obtained direct information of great value from many of the foremost clinicians on both sides of the Atlantic. Regardless of other possible criticism, therefore, it can hardly be maintained that the theory of type has been presented hastily and without due consideration.

For the sake of brevity, in direct reply to Dr. Hooton, reference will be made to his article according to the serial number of its paragraphs.

I. One can come nearer to a diagnosis than might be imagined, by inspection and elimination.

II. "Granted that there are tall men and short men, lean men and fat men, and that if we divide men on the basis of these two dimensions it will be found that the short, fat men are more liable to apoplexy, and the tall, lanky men to pulmonary diseases." To admit this is in itself to go almost the whole distance in admitting the existence of type.

It is utterly absurd to state that the classification is "based on one or two anatomical characters." The disputed classification itself contains several pages of differences between the types.

III. The establishment of an "anthropological type" had not occurred to me, but at least one anthropological worker¹ has for the past ten years been attempting to prove that one can recognize such types, regardless of race.

IV. It is certain that Dr. Hooton's anthropological method would smother any attempt to prove the types, but it is already admitted that "short, fat men" and "tall, lanky men" are liable to different diseases. It is inconsistent to start a proof with figures on the "Belgians" and to continue it on the "Europeans," but even these mixed figures admit that after ten years of age women are consistently heavier for height than men. This also supports the relation of type and sex. Why? because, for example, the general statement that fatness and hypothyroidism, thinness and hyperthyroidism are concomitant, finds ample support in the literature.

V. Humanity in the mass does change its type, to a certain extent, during life. But at given ages it will be found that different individuals change to different degrees. Puberty,

for example, comes earlier in the carnivore than in the herbivore, regardless of race or distance from the equator. I certainly have not left out of my "calculations the changes in body form due to age." It is altogether too elementary and obvious a proposition. Likewise, it is very definitely known "to what extent the length of the gut may vary in its absolute and relative size during the lifetime of the individual." Plenty of references will be found in the bibliography⁵ above mentioned.

VI. It is difficult to see why "the illustration of the Indians is particularly unfortunate," unless Dr. Hooton has in mind barnyard or reservation Indians. In former, and for them better days, the braves had no time to wait on the warpath or upon the hunt for corn to grow. The squaws grew the corn at home and did the heavy chores, while the braves covered the country on the run and subsisted upon the game they could kill. The men had to be long and thin or they couldn't stand the pace. In northern Labrador dwell a small remnant of original Americans who yet subsist by hunting, to whom bread and salt are strange, and who depend not upon firearms but upon the spear for killing caribou and upon the wooden hook for catching fish. They live on the country or cease to live at all. This is the variety of the Indian to which I referred, and their outward characteristics as to contrast in body form of the sexes are those represented 25,000 years ago by the artists of the cave-dwellers. It is interesting to remember in this connection that it is only a step from the ideal of female beauty of the prehistoric cave man to the present-day ideal of beauty of the Circassian, whose recumbent Venus must be possessed of sufficient adiposity to make possible the containance of at least an ounce of oil in the umbilicus.

VIII. Figures for races befog the issue. They are of no value for present purposes.

XI. Pigmentation often is excessive in the carnivore. But it is usually of pathologic origin, due often to intestinal conditions which prevent proper excretion and the retention of toxic waste products in the organism. Normal pigmentation is a different matter and perhaps largely a matter of racial characteristics aside from the present issue.

XII. "Of course there may be many individuals with the physical and physiological characters described." It is admitted, then, that type may exist. I never asserted that it was a racial or ethnic affair. Obviously it is not, but the two types occur in almost every race.

XIII. Prominent cheekbones certainly are correlated in the living with a narrow face, close-set eyes, and an aquiline nose. This has nothing to do with skeletal arrangements, but is dependent upon the fact that the face is typically "lean and hungry" looking. The nearest example at hand, of this fact, is an illustration in the Sun-

day paper.¹⁰ Allen of Alaska has just delivered to Capt. Haas of the French army a shipment of his Alaskan dogs. Racially different, the similarity of contour of these two keen faces is striking. To this same type belong Wilbur Wright and Marconi, Lincoln, Emerson, Gladstone and Voltaire, the present rulers of Spain, Serbia, Montenegro, Bulgaria, Germany, Denmark, Sweden, Norway, England and Russia, the Duke of the Abruzzi, Garibaldi, Michael Angelo, Leonardo de Vinci, and many other celebrities who have lived before and after Julius Caesar, not to mention Vesalius, Tuffier, Garré and other well-known medical men. The few chieftains whom I have seen among the northern Labrador Esquimaux are as different in appearance from the others of their tribe as is the Mikado from his peasants. These chiefs are almost a head taller than their people, and their faces are thin, with finely chiselled features. The ordinary modern Esquimaux is a sedentary and lazy individual who will not work when he can avoid it; he is very fond of blubber, which is fattening, and one of his greatest delicacies, according to Dr. John Little¹⁴, is the partly digested moss from the stomach of freshly killed caribou.

XIV. "Microcephaly is certainly rare and generally implies idiocy. Microcephalic idiots are generally far below normal stature." Entirely correct. The only ones I have seen have been idiots in insane asylums, but most of them seemed to be of carnivorous type despite their small stature, which, as previously stated, means nothing definite in regard to type. The carnivorous type is commonly tall, but may occur in miniature at almost any height.

XVII. Bean² has been devoting some time to writings which tend to prove that type and ears do correspond. His hyper- and meso-ontomorph types are my carnivores and herbivores. It is also my observation that there is a certain correlation between type and the form of the ear.

XVIII. "Hypertrophic arthritis" is known to be very frequent on the bones of all ancient races. They were, aside from disease, more liable than moderns to trauma of all sorts. In the living, this nomenclature is reserved for a somewhat definite clinical entity.

XIX. Is there then no difference between "goitre" and "exophthalmic goitre"? It is well understood that men wishing to avoid military service in the region mentioned, drink the waters of known localities for a month or two, acquire a goitre, get their release from duty, cease drinking the given water, and within two months more have recovered their previous state of health. They would scarcely be so casual were they to face the danger of acquiring the exophthalmic variety of goitre.

XXIV. Of course the carnivorous type is not increasing in Europe. The Roundheads remained in England. The Puritans left for America, and the carnivores have been leaving

England ever since. They prefer a new country where restrictions are fewer, and freedom and opportunity are more abundant. Figures are given in this article to show that the carnivore does predominate in this commonwealth.

XXVI. My remark concerning latitude and diet is obviously a generalization, and therefore open to exceptions, but it is believed that in general it does hold true. Cannibalism is now frowned upon. It was once pretty frequent, and even now one may read well authenticated accounts of shipwrecks or disasters from which the survivors escaped by virtue of subsisting on those who were less fitted to withstand the exposure than themselves. Certain primitive tribes still enjoy the odor and taste of human flesh. It is not impossible that boiling victims in oil and the burning alive of martyrs, witches and others, may be an atavistic expression of cannibalism. In short, a desire for meat seems universal to man, but, on account of various obstacles, the majority of the billion or more inhabitants of this earth have to do without it, much of the time. The desire for fats and carbohydrates is also universal, though also varying in practice with local conditions. Thus different races have their own specialties in the way of fats and oils. As for carbohydrates, even the Nascaupsee Indian, essentially a pure carnivore, when starting out for a day's hunt, takes as sustenance only a cup of water into which he stirs a handful of "uinastikai." This substance is prepared chiefly from caribou blood, and the partly digested moss from the stomach of the caribou. In this connection, Cabot⁷ says, "It is probable that the slightly digested moss which enters into the uinastikai appeals to our natural desire, seldom gratified in the northern life, for starchy food."

XXVII. Granted that some meat eaters do exist near the equator, even then it has no effect on the general theory of type. But in his attempt to prove the contrary, Dr. Hooton has provided a beautiful example of correlation between diet and type. The efficacy of the tropical jungle may have some local effect in varying the intensity of the action of the sun, but in this case it is, at least, a matter of very secondary importance. One need not look beyond the diet for an explanation of the fact that "the full-grown Masai of pure blood is generally six feet in height at the age of 16, though at that time he is often a spindly and cumbersome and ungraceful hobbledohoy. Three years, however, of an exclusive diet of milk, blood, and half-raw beefsteaks, combined with a rigorous training in warlike and athletic exercises, have developed him into a sinewy and muscular man." This is precisely what is to be expected of such a diet.

XXVIII. It is a pleasure to express my gratitude to Dr. Hooton for his calling attention to two misprints and one error in arrangement, existing in a paragraph containing the reference to Treves, which he quotes. "Animals" should read "Mammals," "Insects" should read "In-

sectivora;" the passage¹⁹ should read: "through the insectivora and cheiroptera to the monotremes." Treves only infers that perhaps the amphibians come below the monotremes, so all reference to the amphibians is best omitted. With these corrections, the passage is again presented. I did not originate it. It has been available for thirty years, and complaints should be made to its originator. If it is incorrect, there has certainly been time for revision. In this connection, it is sincerely to be hoped that the general theory of type, and in particular the provisional classification, will be subjected to further criticism. Although it is believed that the general theory will stand, it is entirely probable that details must be revised. Any valid corrections offered will be accepted with thanks, and acknowledged with gratitude.

XXIX. It is to be deplored that Dr. Hooton should draw such a peculiar inference. It certainly had not occurred to me.

XXX. Dr. Hooton would be conferring a favor if he would state his "other reasons" why he "cannot believe in the existence of" the carnivorous and herbivorous types of man. As has been previously remarked, his anthropologic method would certainly never reveal the existence of type even if there were a doubt of its existence, which, fortunately, there is not. One word of caution is necessary. In working with type, it is difficult to do much in infancy or before five to seven years of age. Internally, intestinal and ductless glandular variations may be demonstrated even early in the foetus, but outwardly, all infants have much the same body form.

In conclusion, it may be stated that Dr. Hooton's objections do not appear to be sufficient to overthrow the theory of type which has been presented. To reverse his parting words: I think I do not go too far when I say I feel assured that if students preparing for an anthropological course were thoroughly grounded in medicine, it would very greatly enlarge their field of vision in their later professional career, and that such a preliminary training would result not only in invaluable contributions to medicine by members of the anthropological profession, but would also be instrumental in the advancement of medical science.

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CONCERNING THE RAISON D'ÊTRE OF THE TERM "INVOLUTIONAL" AS APPLIED TO MELANCHOLIA.*

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THERE is probably no easier way out of the subtle and complex problem of causation in mental disorders than to ascribe to certain epochs in human life,—puberty, adolescence and the climacteric, for example—consequent organic upheavals in circulation, in ductless glands or in any other component part of the economy to which fancy may lead the attention of the individual observer, to make these upheavals responsible for whatever mental aberrations may occur in the given epoch and to attach to these aberrations names suggested by the epoch. Such a procedure may, superficially at least, satisfy the demand for differentiation which obtains in clinical psychiatry. But is it ever warranted by close observation of clinical and pathologic facts?

A complete answer to this comprehensive question the writer will not venture to attempt, but will confine himself strictly to the case of so-called involutional melancholia and endeavor to set forth valid reasons for believing, as he does, that the term is purely one of convenience and one without the slightest *raison d'être* from a descriptive, a pathologic or a differential standpoint.

According to the well-known views of Kraepelin, melancholia occupies the foremost place in, and is the most typical of, the group of psychoses which he believes to stand in direct causal relationship to *general* involutional changes. Furthermore, he extends it to embrace all pathologic anxiety-depressions of the last half of life, which do not represent episodes in other forms of mental disease.

According to the same observer, the age of onset varies between forty and sixty-five years, and the incidence of the disorder, as regards sex, is 60% among women as against 50% among men. It is also his idea that melancholia probably represents a pathologically intensified expression of the growing feeling of incapacity and inefficiency natural to advanced years as opposed to the consciousness of superabundant vigor which obtains in youth.

The excuse for exploiting these Kraepelinian views, familiar to you all, is that they furnish an integral part of the basis of the argument to follow. First of all, it is difficult for the writer

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