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GIANTS AND GIANTISM.

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Dr. Chas. L. Dana.

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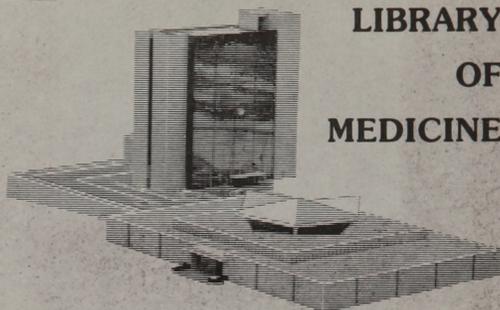
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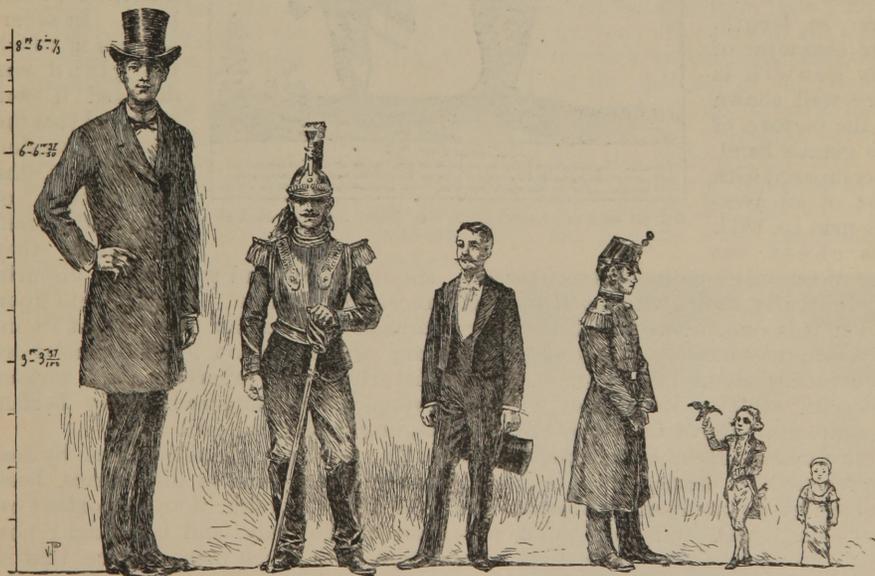
GIANTS AND GIANTISM

By Charles L. Dana, M.D.

IT is now about two years since a band of Peruvian Indians came to this country for the purpose of amusing the American public. They were not sufficiently interesting to attract attention, so they became stranded and were brought to New York. One of the members of the tribe was known as the Peruvian Giant. He was soon taken ill, and came under my observation at the hospital. I saw at once that he was not only a giant, but a victim of a peculiar disease known as acromegaly (*ακρον*, extremely; *μεγαλος*, great). In persons who have this disorder, the head, and particularly the face, the hands, feet, and the chest grow to enormous proportions, the total height, in most cases, not being greatly increased. However, the Peruvian Giant had not only enormous feet, hands, and head, but he measured six feet nine inches in height, and in stature and weight was genuinely gigantic. He was, in fact, both an "acromegalic" and a giant.

He died, after a short illness, from the effects of his disease, and in the brain there was found a little gland known as the pituitary body, enlarged to many times its original size.

Now, it has been suspected, and by many believed, that the enlargement of this gland was the cause of the gigantic growth of the extremities in acromegaly. It occurred to me that it might also be the cause of giantism in general, and the further legitimate inference was that all giants were simply peculiar types of acromegaly, and that giantism was only a form of nervous disease. The idea that big men are not simply freaks, as has been previously supposed, but victims of a neurosis or nervous disorder, was one of sufficient interest to justify me in following up the subject of giants from the neurologist's standpoint, and my results, I think, have justified the expenditure of some little time on the matter, as well as furnished, perhaps,

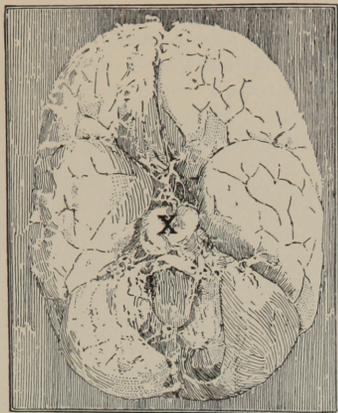


The Variations in Human Stature.

The giant Winckelmeyr, measuring 8 ft. 6 in., at the left; a new-born child to the right.

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say a word about it. It is, in healthy persons, a small round substance, about as large as a pea, placed at the base of the brain, just back of the nerves of



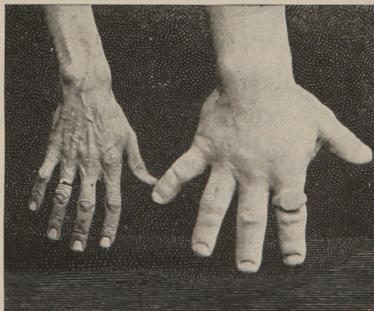
Brain of a Giant showing at X the Pituitary Gland.

the eye as they cross in order to pass out of the skull into the orbits. It is securely protected in a little depression in the skull, just above the roof of the throat (pharynx). This part of the throat is often diseased in children, and when such trouble occurs to a large extent, the health of the child is much affected. Whether the close proximity of the pituitary gland has something to do with this, is a subject of legitimate speculation.

Nowadays, in determining the size of some special part of the body, we often gain a great deal of light by following back the history of it throughout the animal series, and it is through anatomical studies of this kind that our ideas of the functions of this gland are best obtained. In the very lowest types of our vertebrate ancestors, there is an opening between the throat or the mouth-cavity and the brain-cavity, at the point where the pituitary gland lies. This opening leads into a passage which extends through the centre of the brain and spinal cord, and by means of it water and air are carried into the nerve-centres. The pituitary gland, in these lower animals, stands at this orifice and there exercises a twofold duty. One part of the gland, consisting of nervous matter, acts as a sort

of sense-organ and aids in selecting the right kind of watery nutriment. The other part, which is a glandular organ, discharges into the opening in the nervous system a fluid which has a material importance in nourishing the nerves. In other words, this pituitary gland, in the lower animals, acts as a kind of nostril for controlling and helping the nutrition of the nerve-centres. As the vertebrates develop and their structure becomes more complex, the necessity for the nervous part of the gland ceases, and the orifice between the mouth and brain becomes closed up. The glandular part proper, however, which furnishes some material that has an important use to the proper growth and action of the nerve-tissues, remains, and throughout the whole of the vertebrate series, up to man himself, it has not materially changed in proportionate size, though undoubtedly its relative importance has become very much less. The pituitary gland, therefore, we believe to be still an organ which separates from the blood some substance that has an important use in the economy. When destroyed, the body wastes and growth stops; when enlarged and over-active, excessive growth occurs.

The first confirmation that giantism was a nervous disorder and not a freak, came through an elaborate anatomical study of the skeleton of one Cornelius McGrath, an Irish giant, made famous by the attentions originally bestowed upon him by Bishop Berkeley. This benevolent prelate is reported to have taken Cornelius, who was an orphan boy, fed him on some giant-making



The Hand of a Giant (with Acromegaly) and that of a Man of Average Size.

food with such success, that by the time he was sixteen years old he measured seven feet ten inches in height. Just as the good bishop had got him fairly started, however, as an example of ripe nutrition, Cornelius died. His skeleton, which was preserved in the Trinity College Museum, at Dublin, shows an enormous cavity at the base of the skull, in the place ordinarily occupied by the pituitary gland. The measurements of the bones also show all the characteristics of a case of acromegaly. Professor Cunningham, who has made an anatomical study of the skeleton, pronounces McGrath to be an illustration of this disease.

In one of the museums of this city I found an American giant seven feet four inches high, who amiably consented to let me examine him. I discovered that, in addition to his admirably gigantic proportions, he had a most curious development of the bones of one side of his face and head, so that he had, besides some of the general signs of acromegaly, a real manifestation of it on one-half of one extremity. He was five-sixths giant and one-sixth acromegaly, at least.

Several other cases of acromegaly in giants have since been reported, but not to weary my readers, I will add that I have procured photographs of nearly all the living giants now on exhibition, together with some illustrations in the works of Ranke and others, and a study of their features shows that about one-half of them are evidently cases of that disease. For the rest, many seem to have normal proportions, yet it is quite possible that eventually the genuine symptoms of the neurosis will supervene, or have already done so.

It might perhaps be inferred that, if the enlargement of the pituitary gland makes people giants, we could artificially increase the stature by feeding persons of stunted growth upon the extract of the gland. This, however, does not, by any means, follow. It is probable that the gland exercises its influence through some modification of the activities of its living cells, or by abstracting and destroying some constituent of the blood, and not simply by pouring its product in unusual amount into the system. Hence, feeding one with the actual gland-substance would be quite ineffective. Still, we know that it is possible, by certain kinds of gland-feeding, to increase the stature of dwarfed persons very rapidly. There is, for example, a gland called the "thyroid body," lying in the neck, the juice of which, when fed to certain kinds of dwarfs (cretins) causes them rapidly to grow. Experiments in feeding animals and men with the pituitary body are, however, now in progress.

Aside from the special interest which I take in the relation of giantism to nervous disorder, there are many curious facts about giants as a class that are worth notice. There are hardly any truthful records of the giants of the past, though literature is full of wondrous tales about them. A French academician, M. Henrion, once estimated the height of Adam to be one hundred and twenty-three feet, and that of Eve, one hundred and eighteen, proportions that must have appeared most formidable to the serpent, and made the proposition for apples seem a somewhat trivial thing. The same authority brings Abraham down to twenty-eight feet, and makes Mo-



A Minnesota Giant with Partial Acromegaly.

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ses only thirteen. Goliath's recorded height is, however, only nine feet nine inches, which is within the bounds of possibility.

Pliny speaks of seeing a giantess ten feet two inches in height, and a skeleton seventy feet long. There are weird stories of the Emperor Maximil-



Chang and the Midget.

ian, who was reputed to be nine feet high and to have eaten forty pounds of meat a day. He was surely Rabelais's model for Gargantua. In the fifteenth century there are records of giant skeletons eighteen and thirty feet long. Evelyn speaks of seeing a giantess ten feet six inches tall, but nine feet or thereabouts seems to have been the favorite size for mediæval giants. As one gets nearer the nineteenth cen-

tury, the height of the big men gets gradually lower. There are still some stories of nine-foot monsters, but no authentic record is given of a human being reaching that height. The heights of the giant only become authentic in the eighteenth century. At that time he developed commercial value as a freak, and as an appendage to persons of smaller dimensions but greater social importance. Descriptions become more numerous in literature and figures more trustworthy. An obliging and candid dealer in freaks has suggested to me that, if one takes from three to five inches from the advertised height of a professional giant, he can reach a fair conclusion as to the facts in the case. Applying this rule, I find that in historic times, giants have averaged from six feet ten inches to eight feet six inches, and the weight from three hundred to four hundred and eighty pounds.

Through the help of Mr. Edward C. Dana, who has most industriously searched the literature of this subject, I have been able to collect the history of all the giants who have gone on record as public characters since 1700 A.D., and I find that the total does not

much exceed one hundred. About twenty of these have been advertised as over eight feet high.

If one confines himself entirely to the giants that have been accurately measured and described by scientists of acknowledged repute (Topinard, Ranke, Virchow, Langer), the list becomes very small.

Professor Cunningham collects only twelve, but to this list I can add several more. Four of these measured over eight feet, and the tallest was eight feet four and a quarter inches. The largest woman that ever lived is beyond doubt Marianne Wehde, who was born in Germany during the present century. According to Ranke ("Der Mensch"), at the age of sixteen and a half, she measured eight feet



four and a quarter inches. The tallest men who have ever lived were an Austrian, measured by Topinard, and said to be eight feet four and a half inches, and Winckelmeyr, measured by Doubes, and said to be eight feet six inches. Buffon refers to a Swedish giant of the same height. The number of authentic eight-footers does not exceed four.

The giant Chang, of pleasant memory to those who visited the shows of Barnum, was massive as well as truly gigantic, but his height was only eight feet, and Ranke makes it less.

At the opposite extreme is the dwarf Borulowsky, who was two feet four inches high.

Nearly every race has contributed to giantism, but the English has furnished far the larger proportion, partly, perhaps, because the English have always been fond of seeing giants and paying for the privilege, thereby drawing the merit of physical bigness, which has always been modest, out of its undeserved obscurity. Next to the English, the Irish have supplied the largest number, but the Irish giant is rarely grown nowadays, since that stock has been drawn upon so heavily by America. Germany and the United States have supplied, each, eight or nine men who have won publicity and fame by their exuberant physique. It seems to be the Central and Western States that supply the American giants, and our war records show that in these regions, together with Maine and Vermont, the average stature is the highest. There have been French and Italian, Negro and Arab giants, but the number is few, and it is evident that the temperate zones and the large races supply the most cases of giantism. It is a curious fact that since biblical days there have been no giants among the Jews.

St. Hilaire thought that giants were more frequent in

the southern hemisphere, but my records do not show this, and the stories of Patagonian giants have not been confirmed.

There are a good many giantesses, but the giants outnumber them many times, nor has the giantess ever, except in one instance, reached such proportions as the male. Ethnologists tell us that in small races the female equals the male, but in large races the male shoots ahead.

Students should explain to us why it is that all the giants of our nursery times were strong, bold, cruel, and voracious, creating terror and devastation in their neighborhood among sheep and bad little boys. As a matter of fact, the giant is physically weak, personally amiable, and not over-intelligent. We say this with due respect to all, and with the admission that there are exceptions to the rule. It is true that in his early years, while getting his growth, the giant sometimes performs



A Russian Giantess.

feats of prodigious strength, but the matured giant is inactive, often feeble, and never evil-minded. A man may be big or bad, but he is never both. Perhaps the cultivation of giantism might promote higher ethical standards, and in so far increase the social efficiency of the race.

The giant, I am sure, dies young. One never sees an old giant, and rarely a middle-aged one. In all my records there is but one old giant, and he is only six feet ten, while giantism can hardly be said to begin in the male short of seven feet. These facts are quite in accordance with my theory, that extraordinary size is a disease, a neurosis of nutrition, rather than a chance disturbance of development.

Giants marry and even have children, but these children do not become giants, for their giantism is an incident, like a fever, and can no more be transmitted than the measles. This would not be the case if giants were born with the giant tendency. Then giantism would run through families like six fingers, cleft-palates, strabismus, or club-foot. There will never be a race of giants; nor is it desirable. The most

efficient work can be got from a medium-sized human machine, as physics and physiology show. Well-fed races, living in good climatic conditions, tend to become a little larger as the generations pass by, but this increase is slight and has, in most races, ceased to exist.

Prehistoric man was slightly smaller than the average man of today, but not very much. There were no prehistoric giants. The human brain is perhaps a little larger and is certainly more efficient, but the bodily stature is much the same as in the days when men lived in caves and clubbed the bear. (T. Wilson.)

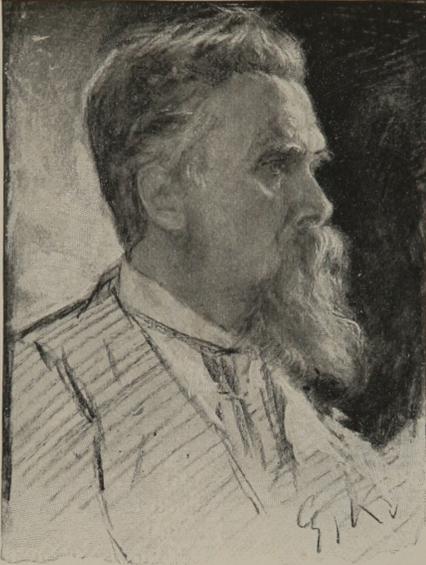
It follows from my view of the case that giantism is not a desirable thing, and may be considered even unsanitary and a legitimate object of attack on the part of students of preventive medicine. They should discourage giants and try to find a way of stopping the terrific impetus to sixteen experiences when giantism sets in. Very likely this can be done, but a study of the matter would take me into technical fields, whither I am requested not to go.



An American Giant.



AMERICAN WOOD-ENGRAVERS—GUSTAV KRUELL



TO GUSTAV KRUELL, a German by birth, but an American in all that pertains to the growth of his art, the American school of wood-engraving owes to-day much of its distinction.

Mr. Kruell was born in Dusseldorf, Germany, fifty-one years ago. After serving an apprenticeship to a die-sinker and general engraver he went to Leipzig, and later established himself as an engraver in Stuttgart. In 1873 he came to America, where his skill at once found employment with some of the leading illustrated periodicals. In 1881 he organized, with his friend Frederick Juengling, one of the most distinguished engravers America has known, the Society of American Wood-Engravers.

In Germany, in the time of his youth, the art that he represented was dull and lifeless and its followers mostly facsimilists. His first real sense of what might be accomplished in the wood came through a study of W. J. Linton's masterly blocks. In them he saw and felt the freedom, the impulses of the artist; they were, as he expresses it, "alive."

*. Three of the illustrations are typical bits of engraving from blocks by Gustav Kruell.

In Linton's use of the graver Kruell found the inspiration he had been striving for. It allowed him some of the freedom of the painter; he felt that he could now express himself in the wood almost as the painter does with the brush. He has always avoided so-called new methods and novel effects in technique for the sake of temporary and eccentric notoriety, well knowing that such things usually indicate the want of appreciation and thorough command of legitimate means. Honesty of intention and vigorous, uncompromising devotion to the best in his art are the dominating notes in Kruell's character and work. Feeling his subject with a rare power of concentration, he believes that a sympathetic rendering of his original is the result to strive for. To give full expression to his work he says the engraver must be first of all an artist in temperament. No amount of technique unallied with the subtle quality that lies deeper than the line, that guides and fills it with the quality we call "artistic," can ever completely satisfy us. Command of the manual niceties of his art, delicacy and sureness in the handling of the graver, has become a minor consideration with him. His hand, thoroughly trained, instinctively responds to the governing ideas back of it. An intense feeling for the result and perhaps a certain impatience at the necessary slowness of the medium in which he works account, no doubt, for the extremely varied quality of his line.

This very diversity, however, this freedom from the bondage of any formal method, enables him to absorb himself in the personality of his subject, and to feel its living influence in his work. In the result no detail is lost, textures are carefully discriminated, peculiarities of attitude, of expression, of dress, are given with fidelity and appreciation of their relative value. To get "inside" is always Kruell's purpose. He is perhaps most successful in reproducing portraits from his own drawings and in combining the best qualities of several

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