

**Report upon some cases of microcephalic idiocy and cretinism / by W.W. Ireland.**

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REPORT

18

UPON SOME CASES OF

MICROCEPHALIC IDIOCY  
AND CRETINISM.

BY

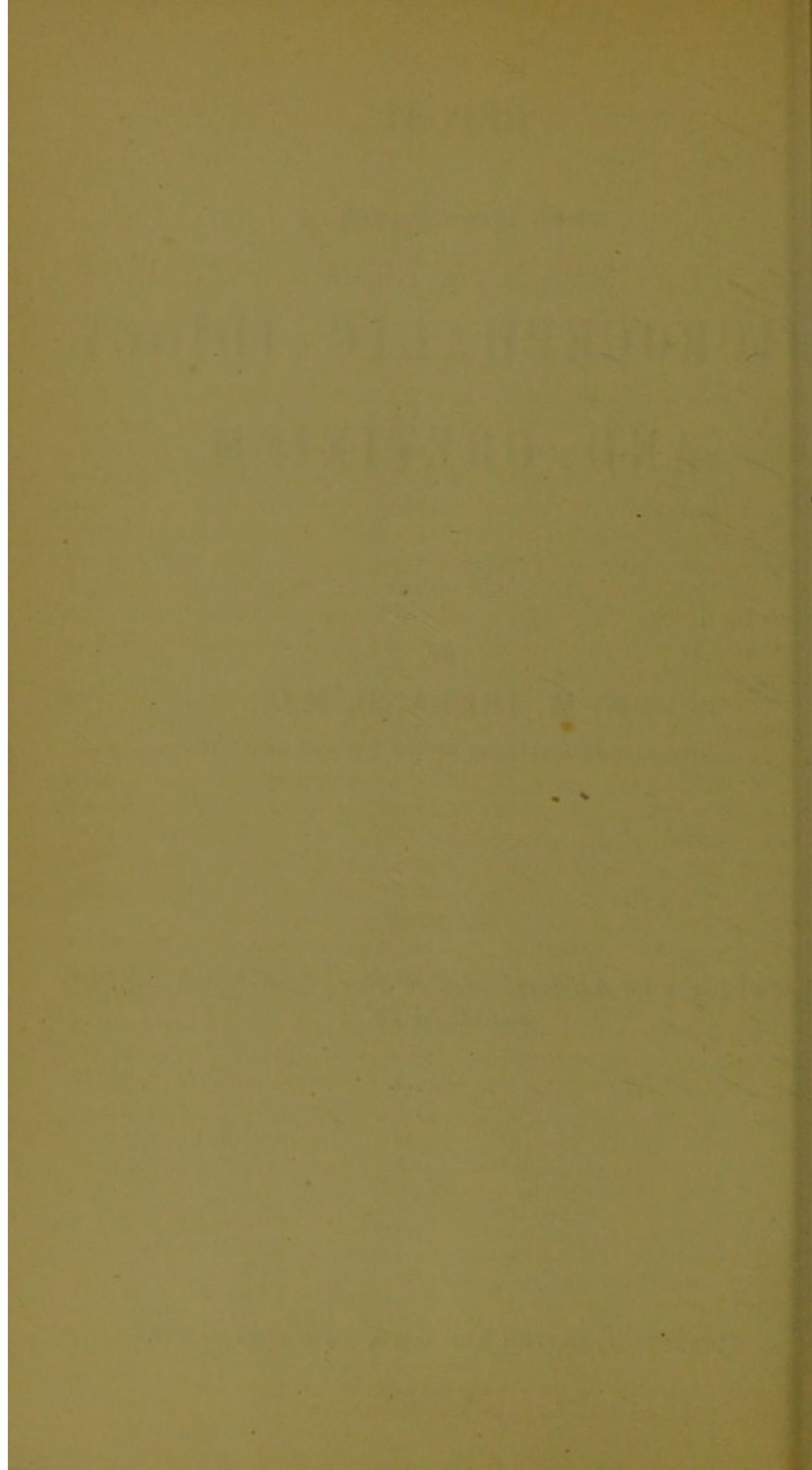
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## CASES OF MICROCEPHALIC IDIOCY AND CRETINISM.

IN the *Rivista Clinica di Bologna* there are two articles by Professor Cesare Lombroso, entitled "Clinical and Anthropometrical Studies upon Microcephaly and Cretinism, with their Application to Legal Medicine" (Fasc. 7 Luglio 1873, and Fasc. 11 Novembre 1873), and one by Dr Valenti, entitled "The Cranium and Brain of a Microcephalic Idiot twenty years old" (Fasc. 2 Febbraio 1873).

As microcephaly is by no means common in this country, and as it has of late excited much attention, I have thought it might prove interesting to afford a condensed sketch of the facts given by these two able observers, abridging in some places, and translating where abridgment would be unwarranted.

Lombroso's first case died twelve years ago in the Hospital of Cremona. He was rather tall, and his limbs were well proportioned; but there was atrophy of the testicles, and the beard was wanting at the age of 25. The head was smaller than that of an infant. From some of his habits, he was called the bird-man (*l'uomo uccello*). He chirped, he leaped on one leg, and before putting himself in motion he stretched out his two arms like wings. He used to hide his head under his armpit, and chirped strongly when frightened or at the sight of a stranger.

He was said to be wanting in touch, taste, and smell, was dirty in his habits, and given to coprophagy. The head was less than that of the ourang-outang or gorilla,<sup>1</sup> having a circumference of 380 millimetres = 15 inches 1 line, and a capacity of 390 grammes. The form was also anomalous. It was oxycephalic, broad at the base, and tapering at the crown, resembling a pyramid, with its

<sup>1</sup> The capacity of the ourang-outang is 448 c.c. for males, 378 for females.

"	of the gorilla	"	500	"	423	"
"	of the chimpanzee	"	417	"	370	"
"	of a newly-born man	"	400	"	360	"
"	of a man 1 month	"	460	"	420	"
"	of a man 1 year	"	900	"	850	"

(*Vogt, Memoires sur les Microcephales*, Geneva, 1867.) But our Giglioli, in his admirable monograph upon the chimpanzee brought by Doria and Beccari, describes a *maias ciapping*, a variety of ourang, with a cranium of 503 cub. cent., and another of 456 c.c. (*Studi Craniologici*, Genoa, 1872). The cranium of an adult microcephale, studied with singular diligence and zeal by Dr Roberti, had a capacity of 370 c.c., a circumference of 332 = 12 inches 4 lines. That studied so learnedly by Valenti had a circumference of 350 mil., equal to 13 inches 6 lines, and the brain weighed 232 grammes.



vertex corresponding to the middle of the sagittal suture. If a line were drawn from the most salient point of the forehead to cross another thrown out from the fronto-zygomatic suture, it had an angle of  $135^{\circ}$ , whilst in the average European the angle is about  $160^{\circ}$ .

The angular processes of the frontal bone were very prominent. The frontal bones themselves were thick, and had a few digitations. The meatus auditorius externus was twice as far forward as in the normal skull. The glenoid fossæ were more converging behind, and less so in front. The carotid foramina were smaller than usual; the molar teeth obliquely inserted instead of vertically. The occipital foramen was carried backwards, and, as noted by Vogt, in his observations on Microcephales, in the sardus pithecus and in the sardus Romanus, the distance from the occipital foramen to the alveolar margin stood as 100 in the first, 95 in the second, and in our microcephale at 92, which is no great difference; but, if we compare the distance of the posterior margin of the foramen to the most salient point of the occiput, we find it 40 in the sardus pithecus, 60 in the Romanus, and 90 in the microcephale; and whilst, as a rule, in man, the length of the base of the cranium is equal to the longitudinal diameter, in our case the difference is from 160 to 140. Tried by the cephalo-orbital index of Mantegazza, this case comes behind the grown-up ourang-outang, and still further behind the young ourang, and at a distance from man as 8 is from 27. All the sutures were open, even the spheno-basilar one, which was found closed in the skull of the grown-up microcephale studied by Vogt and Mantegazza. This still farther weakens the theory of Virchow, who gives so much importance to the closing of the sutures in the production of microcephaly.

I cannot clearly follow the description of the brain, which is much less complete than that of the skull. The frontal lobe looked at in profile seemed to have an irregular margin, and towards the middle line descended with a cleft wide enough to admit two fingers between it and the floor of the skull. The supraciliary lobule is simple, and has no trace of the fissure of Sylvius. The orbital lobe has two gyri on the left side, and three on the right. The posterior lobe is more developed on the right than on the left side, but small on both.

The cerebellum, more developed than usual, was assuredly not covered in any part by the cerebrum, thus losing a character which is not only common to European, but to the human race.

Lombroso gives 55 measurements, some of which are reproduced.

	Metres.	Inches.	Lines.
Bodily height, . . . . .	1.540	= 60	5
External circumference of cranium,	0.380	= 15	1
Internal circumference of cranium,	0.350	= 13	1
External longitudinal diameter, .	0.140	= 5	4
Internal longitudinal diameter, .	0.120	= 4	6



	Metres.	Inches.	Lines.
External transverse diameter, .	0·113	= 4	3
Internal transverse diameter, .	0·100	= 4	0
Distance of anterior margin of occipital foramen to alveolar margin,	0·092	= 3	5
Distance of posterior margin of occipital foramen to most prominent point of occiput, . . . . .	0·030	= 1	1
Distance of the anterior margin of the occipital foramen to the alveolar margin, . . . . .	0·092	= 3	5
Distance of posterior margin of occipital foramen to most prominent point of occiput, . . . . .	0·030	= 1	1
Distance of the auditory foramen to the frontal nasal suture, . . . . .	0·092	= 3	5
Distance of do. to the external occipital protuberance, . . . . .	0·082	= 3	1
Cranial capacity, . . . . .	0·390		
Facial angle, . . . . .	65°		

The name of the second case was Conti Angelo di Spairago, 19 years of age. He had a brother who was 20, but who looked no older than 15; his other three brothers were healthy, but short of stature. The father was small and cretinous; the mother small, and of feeble intellect; had a great fright during her pregnancy, which brought on tremors, cramp in the limbs, want of appetite, and a feeling of cold in the body. The child was born in a state of apparent asphyxia; and after being brought out of this condition, he was found to have paralysis in the right side. He could not shut the right eyelid (apparently this deficiency never left him), and the food came out of his nostrils when he sucked. Thus there were two factors in his idiocy—microcephaly and cerebral disease. He did not learn to walk till he was 7 years old; and till he was 12, he never made gestures nor pronounced syllables which had any meaning. At 15 he commenced to say "Pa," for father, and "Be," for Isabella, his sister. He was always cowardly, running from boys of 6 years, but was fond of tormenting animals. He used to bury frogs and hens, and sometimes spitted and roasted them while still living. He used to carry on war with the cocks of the neighbourhood, who tried to protect the hens, and he had not always the best of it. When examined, he appeared about the usual stature, 1 metre 50 = 59 inches, but of light weight, 38 kilogrammes, skin fine, and abundance of chestnut hair. The face and forehead, to the angle of the jaw, was covered with down; chest narrow. The thumbs were somewhat smaller, and the great toes somewhat longer, than usual, but movable as in the apes. He had right scrotal hernia. The penis was very small, like an enlarged clitoris, with wide urinary meatus. The testicles were no bigger than beans. The cranium was asymmetrical. The fore-



head was small, and depressed on the right side, and behind there was a depression on the left occipital bone. The teeth were very irregular, the palate long and sharp. The muscular force, tried by the dynamometer, is not much reduced—75° on the right hand and 70° on the other. Taste is normal, and sensibility less on the right side than on the left. He knows his mother and brothers, imitates military exercises, keeps his own body clean, is passionately fond of music, and has learned a few words about his food, but cannot speak, or even converse by signs. He goes by the name of the rabbit-man (*l'uomo coniglio*), from his habits of moving the nose and lips, and from being timid and fond of green vegetables, such as salads and cabbage. When he is frightened he stamps with the feet as rabbits do. This seems rather to be a case of paralytic idiocy than of microcephaly.

	Metres	Inches.	Lines.
Bodily height, . . . . .	1.500	= 59	0
Greatest circumference at cranium,	0.490	= 19	2
Longitudinal curve, . . . . .	0.300	= 11	6
Transverse curve, . . . . .	0.300	= 11	6
Breadth of forehead above, . . . .	0.070	= 2	6
below, . . . .	0.130	= 5	2
Height of forehead on the right, . .	0.040	= 1	5
"                  "                  left, . .	0.030	= 1	2
Longitudinal diameter, . . . . .	0.168	= 6	2
Biparietal diameter, . . . . .	0.142	= 5	4
Distance of the auditory meatus from the root of nose on right side, . . .	0.130	= 5	2
Distance of do. on the left, . . . .	0.160	= 6	3
Facial angle on the right, . . . . .	68°		
"                  "                  on the left, . . . .	75°		
Fronto-orbital angle, . . . . .	140°		

In the third case, Robolino P., 18 years of age, of healthy parents, but had uncles and a grandfather who had goitre. The cranial circumference, 495 millimetres, 19 in. 3 lines; is strong and intelligent; writes and reads well. At the age of 16, had headache, murmuring in the ears, and nausea. He recovered, but a short time afterwards became suddenly immovable, and obstinately silent. Four months after he became unquiet and loquacious, and recovered.

	Metres.	Inches.	Lines.
Height, . . . . .	1.570	= 61	6
Cranium circumference, . . . . .	0.495	= 19	2
Occipito-frontal curve, . . . . .	0.320	= 12	4
Biauricular, . . . . .	0.290	= 11	3
Longitudinal diameter, . . . . .	0.175	= 6	6
Biparietal diameter, . . . . .	0.138	= 5	2
Facial angle, . . . . .	78°		
Dynameter (kilogrammes), . . . .	95		

The fourth case, Martinetti Colomba, had a brother and sister



who were some time insane, and the brother was also microcephalic. About the eighth year she suffered from some head disease, and after that was subject to hallucinations, such as that the images of the saints in the churches came down to speak to her. She was somewhat deficient in intelligence, but could work as an attendant in the Asylum, where she died of pneumonia. She had the appearance of a Mongolian, with olive complexion, black hair, thick down on the forehead and chin, and oblique or quadrangular orbits. The upper jaw was more protruding, the lower jaw was less prominent than usual. The posterior clinoid processes were found wanting, and there was a pointed tubercle at the upper extremity of the basilar process. The dura mater was found adherent; the pia mater congested; the convolutions not complicated and atrophied. The left frontal lobe was smaller than the right.

	Metres.	Inches.	Lines.
Height, . . . . .	1.052 <sup>1</sup>	= 41	2
External cranium circumference,	0.470	= 18	4
Internal cranium circumference, .	0.450	= 17	6
Longitudinal curve, . . . . .	0.360	= 14	1
Transverse curve, . . . . .	0.361	= 14	1
Longitudinal diameter, . . . . .	0.158	= 6	0
Transverse diameter, . . . . .	0.130	= 5	1
Cephalic index, . . . . .	0.860		
Cranial capacity, . . . . .	0.815 c.c.		
Facial angle, . . . . .	65°		
Fronto-orbital angle, . . . . .	130°		

The fifth case was called Battista, a foundling 3½ years old, and somewhat small for his age. His forehead, limbs, cheeks, and neck are covered with fine hair, about the length of seven millimetres. The hair of the head is abundant, and of a yellow colour. The head pyramidal, with a retreating forehead, and the angular processes of the temporal bone very marked. The linea arcuata of the temporal is prominent, the face protruding, the incisors distant from one another, the canines double the usual size, and the palate vaulted. The sensibility is normal. He has little affection, but seems to seek the society of others. He uses the following words:—"Pa," for father, bread, and brother; "Ba," for ugly and beautiful; "Bon," for sweet and for fruit; "Da dam," for give me something. He smells food before eating, is passionate, very restless, strong, and active, and extremely fond of leaping, at which he is very expert. He leaps with the spine bent, and hands before him, like an ape. He goes by the name of the monkey (il scimmiin).

	Metres.	Inches.	Lines.
Height of body, . . . . .	0.790	= 31	1
Circumference of head, <sup>2</sup> . . . . .	0.360	= 14	1

<sup>1</sup> This woman is said to be of low stature, but 1052 millimetres make her a mere dwarf; probably a misprint for 1520 mill. = 4 feet 11 inches.

The circumference is given 0.036 = 1 inch 3 lines. It must be 0.360, as I have ventured to correct it. The next two figures had also got out of place.



	Metres.	Inches.	Lines.
Longitudinal curve, . . . . .	0·230	= 9	0
Transverse curve, . . . . .	0·190	= 7	4
Longitudinal diameter, . . . . .	0·128	= 4	6
Transverse diameter, . . . . .	0·100	= 4	0
Distance of auditory meatus to the alveolar margin, . . . . .	0·087	= 3	2
Distance of do. to the superior occi- pital protuberance, . . . . .	0·085		
Facial angle, . . . . .	72°		
Fronto-orbital angle, . . . . .	120°		
Weight of body (kilogrammes), . . . . .	7		

The next three cases were brothers named Cerretti. The father was a rather tall man, of a scrofulous constitution; the teeth and ears ill formed, and the occiput flattened. The mother, delicate and stupid, had the appearance of a cretin, and suffered from continual headache. One of their cousins was insane, and some had been condemned for homicide. They had eight sons, one only of whom was intelligent; the other seven were all idiots, and four of them died from cerebral diseases. The neighbours thought the cause of so many sons being idiots was that the mother kept a monkey. The three microcephales have all a retreating forehead covered in part with down, with an enormous fronto-orbital angle, an obtuse facial angle, and a small oxycephalic head.

The eldest, Nicola, now 24 years of age, is rather tall, with enormous ears. The arms are long, owing to the disproportionate length of the forearm. He has no beard, and seems little sensible to electricity. Begging is his occupation, which he does in a persevering manner; but he could never learn to work. He is tolerably good-natured; but has very weak intelligence, though not without a certain amount of cunning. He exercises over his brothers a species of guardianship; but more for his own advantage than for theirs. He has absolutely nothing resembling the ape about him, save that he stoops in walking like a tamed monkey. Serafino, the second brother, is about 13. He has the superior canines more developed than normal, and distant from the incisors. Of a malicious disposition, he beats without mercy his little brother, to rob him of his bread and money, and only obeys the bigger brother, grinding his teeth. Giovanni is 10 years old. He has an osseous elevation along the sagittal suture. The forehead is covered with hair, or rather down. The upper incisors are larger than usual, and two of the under ones are wanting. The canines are isolated and pointed. He is strong and much more vivacious than the rest; rolls the eyes quickly like a monkey, touches everything with the hand, and imitates gestures. He has learned to sew and to do little messages. Lombroso could find in none of the three that the sense of taste was normal. They said that assafoetida was good, and musk bad. The little one liked quinine, the others did



not. "It was curious," says the author, "to see them going together; the biggest one with his head bent on his breast, and his long arms almost touching the ground, thrashing the others if they did not follow him, but letting Serafino beat Giovanni when he wished to keep what he got in alms." They bring the bread or money, which they get, home, but do not give it willingly up to their parents. In winter, having only one coverlet, they fight to have a larger share. Sometimes they wander about four or five days without returning home.

The accompanying Table of Measurements of these microcephalic idiots is reproduced, without any curtailment. I have added the corresponding length in inches as far as they could be approximated.

		CERRETTI.					
		NICOLA.		SERAFINO.		GIOVANNI.	
		Age.		Age.		Age.	
		21		13		10	
		Metres.	Inches.	Metres.	Inches.	Metres.	Inches.
Height, . . . . .		1.65	= 65	1.35	= 53	1.17	= 46
		Kilogrammes.		Kilogrammes.		Kilogrammes.	
Weight, . . . . .		56.500		34.00		24.00	
		Mill.	About in. ls.	Mill.	About in. ls.	Mill.	About in. ls.
Fore- head.	{ Circumference, . . . . .	450	= 17,6	420	= 16,4	410	= 16,2
	{ Antero-posterior, . . . . .	240	= 9,3	260	= 10,2	250	= 9,6
	{ Biauricular, . . . . .	220	= 8,5	210	= 8,2	220	= 8,6
	{ Breadth, . . . . .	100	= 3,7	150	= 5,7	150	= 5,7
	{ Height, . . . . .	200	= 7,7	300	= 11,7	200	= 7,7
Diameters.	{ Longitudinal, . . . . .	148	= 5,4	145	= 5,4	140	= 5,4
	{ Transverse, . . . . .	122	= 4,6	120	= 4,5	110	= 4,2
	{ Bimastoid, . . . . .	120	= 4,5	110	= 4,2	100	= 3,7
	{ Bizygomatic, . . . . .	130	= 5,1	103	= 4	98	= 3,6
	{ Fronto-mental, . . . . .	157	= 6	162	= 6,3	130	= 5,1
Ears.	{ Occipito-mental, . . . . .	200	= 7,7	186	= 7,2	175	= 6,7
	{ Length, . . . . .	60	= 2,3	48	= 1,6	54	= 2
	{ Breadth, . . . . .	34	= 1,2	30	= 1,1	30	= 1,1
Length of arm, . . . . .		330	= 13	300	= 11,7	210	= 8,2
" forearm, . . . . .		380	= 15	230	= 9	165	= 6,2
" hands, . . . . .		190	= 7,4	180	= 7,1	111	= 4,2
" thigh, . . . . .		510	= 20	370	= 14,6	290	= 11,3
" leg below the knee, . . . . .		410	= 16	335	= 13,1	240	= 9,3
" foot, . . . . .		265	= 10,2	230	= 9	200	= 7,7
" calf, . . . . .		320	= 12,6	250	= 9,6	210	= 8,2
Distance of auditory meatus to the chin, . . . . .		170	= 6,6	130	= 5,1	140	= 5,4
Distance of do. to bregma, . . . . .		160	= 6,3	150	= 5,7	145	= 5,4
Distance to root of nose, . . . . .		140	= 5,4	110	= 4,2	105	= 4
Distance of the nasal septum from the alveolar margin, . . . . .		20	= 0,6	25	= 0,7	15	= 0,5
Fronto orbital angle, . . . . .		115°		122°		100°	
Facial angle, . . . . .		68°		70°		72°	
Force of fist, . . . . .		88		48		40	



The ninth case, Ragni A., was born of cretinous parents, and had a sister a cretin and microcephalic. She could not walk before 6 years of age; after which she did not appear to differ much from other girls. At 20 she had an attack of acute mania, from which she recovered, but became epileptic, and then relapsed into insanity. She died at the age of 30, of phthisis. The circumference of the cranium was 490 millimetres, 19 inches 3 lines, on the outside; and 426 millimetres, 15 inches 5 lines, internally. There was no trace of sutures in the cranium, which was thick and heavy.

## OTHER MEASUREMENTS.

Cranial capacity, grammes,	625		
	Mill.	Ins.	Lines.
External circumference, <sup>1</sup>	480 =	18	7
Internal do.,	440 =	17	2
Longitudinal curve,	340 =	13	3
Transverse do.,	340 =	13	3
Vertical diameter,	113 =	4	3
Biparietal,	138 =	5	1
Facial angle,	75°		
Cephalic index,	81°		

The pithecoïd appearances noted in these microcephales were, down scattered over the forehead and body; the size of the ears, the elongation of the limbs and of the phalanges, and their retroflexion. The adductability of the thumb in Case 5; the curving of the back in Cases 2, 5, 7, 8; the leaping character of the walk in Cases 2, 5, and 9. On a previous occasion Lombroso has noted a microcephale in whom the forearm was elongated; and another, Gambardella, whose body was covered with black and shining hairs. "In many others there is not the faintest trace of simian appearances or gestures, as in Cases 3, 7, 8; but one may note a species of atavism less problematical, a retrogression towards the inferior human races. Thus Gambardella had the *steatopigia* (fatty pigment or what?) of the Bosjesman and the black colour of the skin of the negro; and Martinetti had much of the characters of the yellow and black races, a yellow skin, prognathism, the eyes oblique and square, and a retreating chin." "This new species of atavism," says the Professor, "which I may call ethnic atavism, and which we shall also observe in cretins, is a proof to me that we pass through the yellow and black races before obtaining the purity of the Aryan type." In similar fashion, when an Albino or a head of the Aryan type appears amongst the black races, it ought to be a proof that the negro has come through the Aryan type. This spelling and con-

<sup>1</sup> Here again there is confusion in the figures: in the text the circumference is given as 49 cent.



struing of isolated features to find traces of the ape in the human microcephale, seems to me somewhat far-fetched. It is clear Professor Lombroso sought to find analogies, and found a few very equivocal ones. Some peculiarities have no resemblance with any characteristic either of the ape or of the negro, viz., the absence of the testicles in 2 and 7; the malformations in 2, 6, and 8; the want of the incisors, and the want of symmetry in the face in 2.

Lombroso remarks, that the assertion of Vogt that microcephales have a pithecoïd skull on the crown, and human at the base and face, finds both contradictions and confirmations. "It is true that our microcephales have a retreating forehead, and that the arch of the cranium is more or less flattened; it is true that the development of the angular process of the frontal bone, the atrophy of the orbital surface of the floor of the cranium, the ethmoid beak of the cerebral lobes, the incomplete development of the occipital bone, the position of the occipital foramen more forwards than usual, and the direction of the coronal suture in Case 1; these are appearances truly pithecoïd. On the other hand, not only have we in these as in other cases of microcephaly the absence of the median crest of the pitheci, but even the curved temporal bones, so well pronounced in the black races, are wanting."

In making remarks upon the dental abnormalities in his cases, it is singular that Lombroso makes no use of the fact that abnormalities in the shape and position of the teeth are extremely common with congenital idiots who often have heads no smaller than usual. A vaulted palate is noted in three of Lombroso's cases, and this, the most constant accompaniment of congenital idiocy, is not a simian character. Two of the incisors were wanting in No. 7; the direction of the posterior clinoid processes and the osseous spine in the basilar processes in No. 4, have no analogy with the pitheci. None of the anomalies noted recurred with any constancy in these microcephales. Four of them, 6, 7, and 8, and Robolino, could not be called of low stature, and only one had a very thick skull. All the sutures in Case 1 were open, even the sphenobasilar one, which, in the microcephalic cranium described by Vogt and Montegazza, were completely closed.

In Case 4, there was still a trace of the coronal suture, and the squamous suture was open. It was only in Case 9 that there was a complete closure of the sutures, and this was accompanied with great thickening of the cranial bones; but the head was not very small, and the microcephaly was probably not congenital. Valenti has also recorded a case where all the sutures were open, with the exception of the squamous one. This is very different from Bailarger's microcephale, in whom the sutures at the age of four years were not only closed, but the lamdoid and medio-frontal sutures were replaced by a true osseous crest like that in old apes. This, like many other instances, shows that we may have microcephaly with open sutures, which, however, was admitted by Virchow.



Lombroso acknowledges that the mental peculiarities are rather contrary than favourable to Vogt's theory; for no one imagines that a man is descended from birds or rabbits, and it will be remembered that two of his cases had peculiarities reminding one of the habits of those animals. He quotes a case mentioned by Maudsley of a small-headed idiot who resembled a goose in many things, and had the *cutis anserina*; but even the most advanced Darwinians do not claim to be descended from geese, still less from sheep, though Pinel has described another microcephale who affected the habits of that quadruped, among which is mentioned a dislike of flesh and wine, even the gambols of Battistino, which reminded people of a monkey, having nothing very specific. We often see children that are fond of leaping, and given to imitation, without supposing that they could only have inherited these tastes from an ape who has been dead myriads of years ago.

The author remarks, that Cases 2, 3, 5, and 9 show that cretinism and goitre have something to do with the production of microcephaly. He has seen other instances where cretinism was combined with crania unusually small. He observes, that having measured the heads of 835 prisoners, he found that one-fifth of them had small heads. Of these—

90	had heads	53 cen.	=	20 inches 3 lines,	in circumference.
42	"	52			
12	"	50-51	=	19 inches 5 lines to 20	"
1	"	49	=	19 inches 2 lines	"

The author asks, Is not crime in this condition a true pathological phenomenon? In my opinion there is no proof from the mere measurements that even the very smallest circumference, if the head were well proportioned, necessarily implied a brain so small as to exempt its owner from moral responsibility.

It may be here noticed that only four of Lombroso's cases were examples of very small heads; 4 and 9 were above eighteen inches, and Cases 2 and 3 were above nineteen inches in circumference. Case 2 was born to be an idiot independently of the bulk of brain; and in the other three insanity seemed to be a more marked feature than the mental weakness. At the same time it is to be observed that owing to the tapering form of the skull there was more room for the development of the base of the brain than of the vertex, which makes the cranial capacity smaller than would appear from the circumference. But I have already cited<sup>1</sup> the case of a head of a boy only 18 inches in circumference but well proportioned. The boy "was quite as intelligent as could be expected of his age in his circumstances."

In many cases of microcephalic idiocy not only is the brain small, but what is of it is diseased; hence the intellect does not diminish in a fixed ratio with the dimensions of the head.

<sup>1</sup> Edinburgh Medical Journal, February 1874.



In a pamphlet<sup>1</sup> written by a countryman of Professor Lombroso, we have an account of a woman with a very small head. She is called Antonia Grandoni, and was born in 1830. She has always had good health; she has her regular periods; "eats, drinks, and sleeps regularly, and shows attachment to those who are kind to her. She has good sight and good hearing, attends to what is said to her, and gives satisfactory answers; she sometimes smiles, but more to do like those around than for hilarity. She sets herself to work like any other girl." Nevertheless, this woman's head is smaller in circumference than all of Lombroso's cases save the first.

She weighed about 66 pounds, and was 22 inches round the waist, and 30 inches round the pelvis. Her height was 4 feet 4 inches; her hair being thin and short, the following measurements could be taken with some exactness:—

	Mill.	=	Inches.	Lines.
Facial angle, . . . . .	200	=	8	0
Length of the face from the eyebrows to the chin, . . . . .	110	=	4	3
Distance between the zygomatic arches, . . . . .	120	=	4	6
Fronto-occipital, . . . . .	200	=	8	0
Biparietal, . . . . .	200	=	8	0
External circumference, . . . . .	380	=	15	0
Antero-posterior, . . . . .	135	=	5	3
Transverse, . . . . .	105	=	4	1
Line from the sinciput to the base of skull, . . . . .	150	=	6	0

The author gives the measurement of another microcephale called Cioccio:—

	Mill.	=	Inches.	Lines.
External circumference, . . . . .	340	=	13½	0
Antero-posterior diameter, . . . . .	108	=	4	1
Biparietal, . . . . .	98	=	3	7
Line from the sinciput to the base, . . . . .	92	=	3	5

The difference between the sizes of the two heads is not so great,<sup>2</sup> for in the case of Cioccio the examination was made upon the naked bone, whereas in Grandoni the measurements were of course taken with all the integuments of a living head; but, observes Cardona, "the smallness of the brain of Cioccio induced stupidity, idiocy, deaf muteness—in short, simply animal life; the poverty of the brain of our Grandoni in that small size accorded to it by nature, could admit of a sensibility, an intelligence, and an education, which has not fallen much short of the average of her countrywomen."

It is to be regretted, that in this very curious case the author does not give at better length some description of this woman's

<sup>1</sup> D'una Microcefala, per Filippo Cardona, Milano, 1870.

<sup>2</sup> As will be seen in the sequel, Grandoni's brain was actually smaller than Cioccio's.



mental capacity—a remark which holds good for most cases of microcephales. In general we have more measurements than would be required for a mantua-maker, boot-maker, stay-maker, spectacle-maker, and truss-maker, all at once, but the mental characteristics are passed over in loose and general terms. It is, however, not enough to know that a human being may grow up with a head no bigger than a garden turnip; the interest consists in knowing what mental power he possesses with his fraction of brain.

In the *Rivista Clinica di Bologna*, February 1873, Dr Antonio Valenti gives a description of the skull and brain of a microcephalic idiot, who died at the age of 19, the same as mentioned in the pamphlet of Cardona already quoted.

The brain and skull have been already described by Dr Giulio Bastianelli, in a memoir published in the *Bulletin of Medical Science of Bologna* (number for February 1859). The name of the owner of the small brain was Carlo Giuseppe Cioccio. His intelligence was of the lowest character; but it must be kept in view that he was a deaf mute. He died in the asylum at Rome, at the close of the year 1853. The brain and skull are in the museum of the Hospital S. Spirito at Rome. The annexed lithograph, which is carefully copied from the plates in the Italian journal, will be of great service to the reader in following the description. Cioccio was no more than 4 feet 6 inches in height; but, excepting the extraordinary smallness of the head, well proportioned. The skull was slightly oxycephalic; the jaws somewhat prognathous; the orbits were rather square in shape, and were situated higher up above the malar processes than usual, and not in an equal plane, for the left one was slightly higher than the right. The roof of the orbits was more arched than normal, thus invading on the space of the frontal lobes. All the sutures were open save the sagittal one, which was ossified in its posterior half, and the squamous, which was ossified throughout. Dr Valenti observes, that in the white races the coronal suture slopes backwards; whereas, in the savage races, the suture is parallel to the facial bone, thus leaving less space to the development of the frontal bone. The occipital foramen was farther back than usual. The bones of the skull were very compact, of the consistence of ivory. A great many minute details are given, but these seem the most important. The following are some of the numerous measurements furnished by Dr Valenti:—

	Millimetres.	Inches.	Lines.
Circumference, - - -	350	= 13	6
Occipito-frontal curve, taken from root of nose to posterior margin of the occipital foramen, - - -	215	= 9	7
Transverse curve, from superior border of one auditory meatus to the other, -	200	= 7	7
Longitudinal diameter, external, -	156	= 6	0



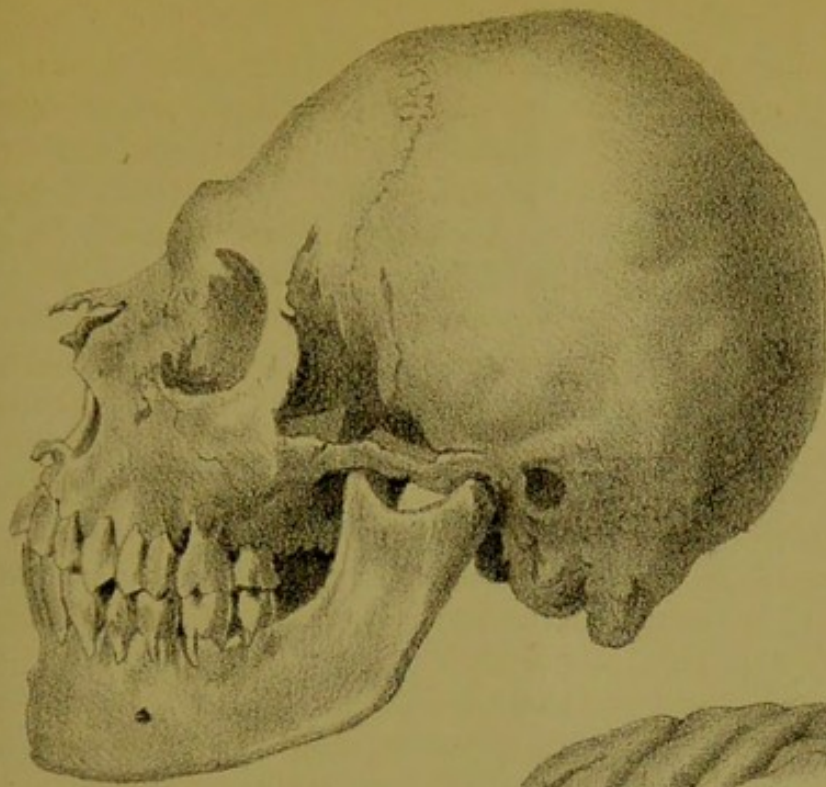


Fig. I.

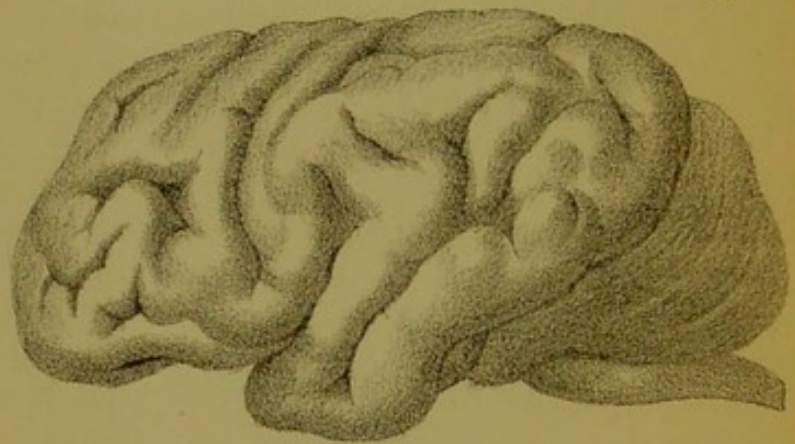


Fig. III.



Fig. II.

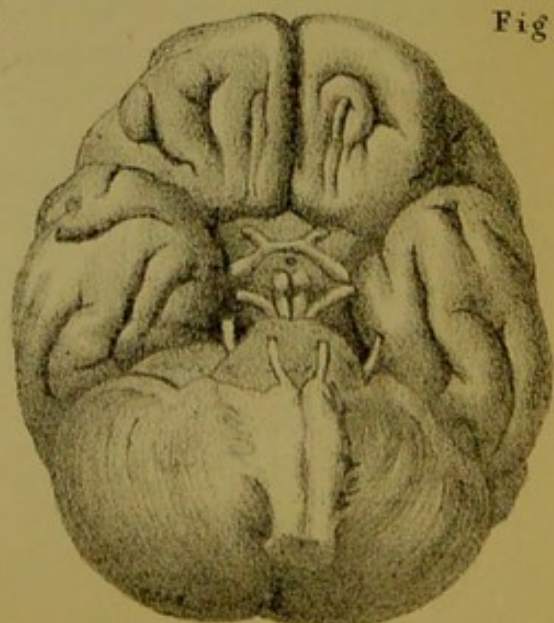
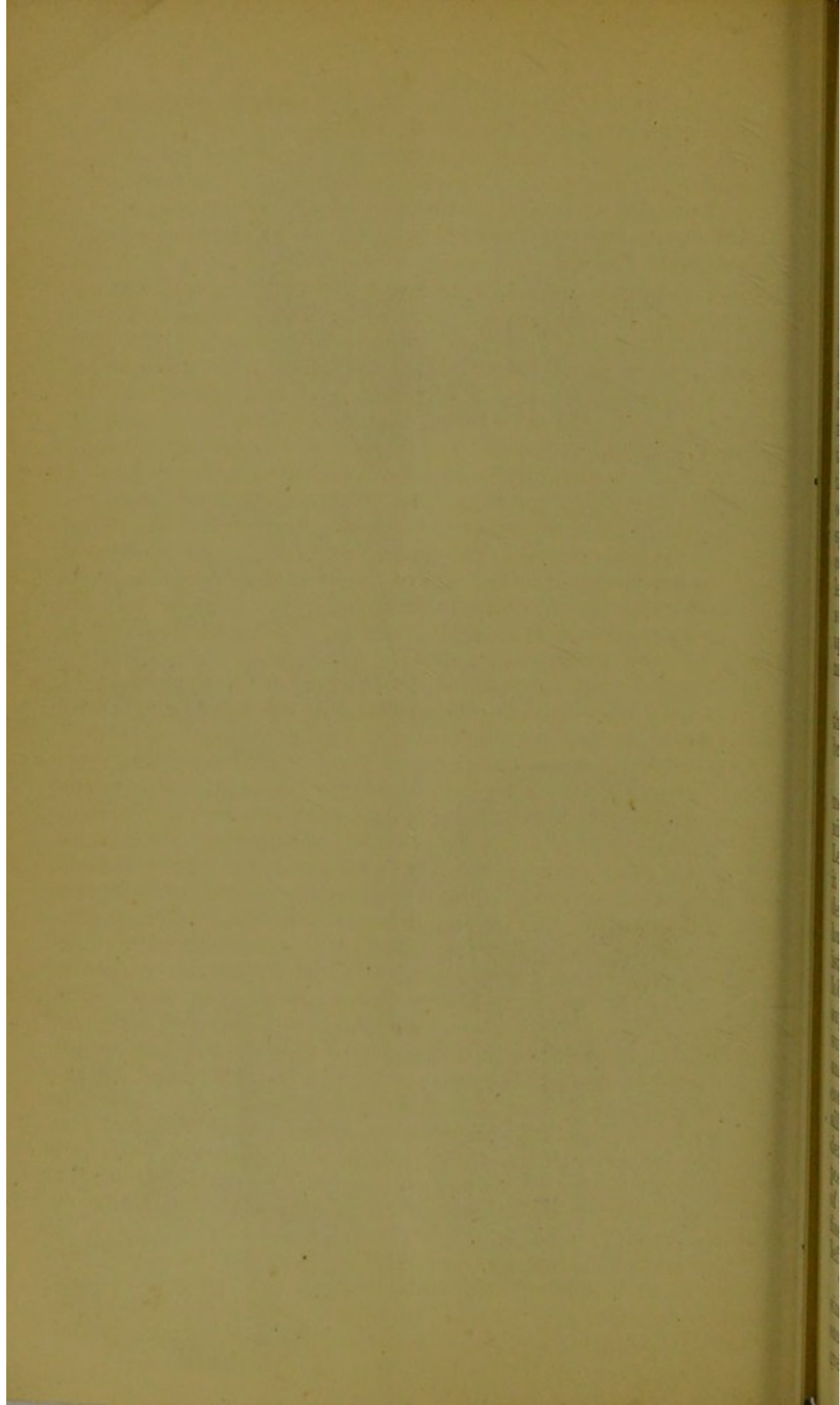


Fig. IV.







Biparietal (external) diameter, taken				
from middle of temporal bones,	-	80	=	3 1
Biparietal (internal) diameter, taken				
from middle of temporal bones,	-	76	=	2 6
Bitemporal diameter (external),	-	92	=	3 5
Internal do. do.,	-	90	=	3 4

There remains no record of the weight of the brain at death. It has now been 19 years in spirits, but the shape seems well preserved. The peculiar appearance of the optic nerves, and the four ganglia instead of the two of the corpora albicantia, in figure 4, are, I suspect, mistakes of the Italian engraver. We have not thought it needful to alter them. The most striking features of the brain are the smallness of the cerebrum compared with that of the cerebellum, and the imperfect development of the parietal and occipital lobes, as compared with that of the frontal and temporo-sphenoidal. The hemispheres are almost symmetrical; the frontal convolutions very simple. The fissure of Sylvius preserves its due length and proportion to the size of the brain, but goes obliquely, somewhat more backwards and upwards than usual, presenting an appearance similar to that in the foetus of the seventh and eighth month in some of the anthropoid apes.

Here follows a long detailed description of the appearance of the different convolutions, as compared with the more complicated brain of normal human beings. Dr Valenti sums up thus:—

“The anatomical studies made on the distribution and development of the convolutions of this brain, have brought me to recognise a considerable degree of incomplete and imperfect organization. Letting alone the simplicity and breadth of the gyri, which make it resemble the immature brain, we find either wanting or at least defective, some of those convolutions which predominate in the human brain when organized, and form, as it were, the characteristic of that high type of brain peculiar to man. These are the lobule of the ascending parietal convolution (*lobulus parietalis superior* of Ecker), very poorly developed in our case. The superior bridging convolution, as we have seen, is reduced to a short and simple gyrus, still hid in the end of the lobule. The second convolution is also very defective, and the occipital lobe, and especially the gyrus occipitalis secundus, is also incomplete. It is the defective organization of these convolutions, extending from the posterior extremity of the frontal lobe, which explains the shortness of the brain of our microcephale, in those parts situated behind the fissure of Sylvius. On account of this shortness the cerebellum is left uncovered.”

“The anterior lobes are certainly the best developed, but the simplicity of the convolutions which compose it, as well as their small size, render this part of the brain also defective. It is the great development of these lobes, especially in the upper frontal



region, which constitutes one of the distinguishing characters of the human brain, capable of the free and complete exercise of intellectual liberty."

Dr Valenti then goes on to show that in this case the smallness of the brain could in no way depend upon the confinement of the bones of the skull, as may have been in the cases of Baillarger, of Cruveilhier, and of Vrolik of Amsterdam, in which the sutures were completely closed.

In an appendix, amongst other cases of microcephaly, we get a little more information about Antonietta Grandoni, already described by Dr Cardona. This woman died at the age of 41, of pyæmia, and there is a paper about her in the *Sperimentale* of Florence, by Dr Adriani, which we should like much to see. The brain of Grandoni was found to be less than that of Cioccio; it weighed 289 grammes. The cerebellum was in part covered; the frontal and temporo-sphenoidal lobes were more complicated and better developed than the posterior lobes. It appears that Dr Adriani confirms the statement of Cardona as to the amount of intelligence shown by Grandoni; but whatever details of this kind are given, they are not reproduced by Valenti. This deficiency of mental analysis, as already remarked, is a common fault in descriptions of microcephalic idiots. In the description of Cioccio, though we are told that he was a deaf mute, there is not a sentence to indicate that Dr Valenti laid any stress upon the great impediment which the want of hearing must have had to the evolution of a feeble intellect—in fact, an uneducated deaf mute in many respects resembles an idiot.

It may not be here out of place to give a short account of a conversation which the writer of this report had with a microcephalic idiot, illustrating in a striking manner his peculiar mental deficiencies.

I saw him at the workhouse at Lancaster about a year ago, along with Dr Shuttleworth, Medical Superintendent of the Royal Albert Asylum. He had much of the appearance of an English labourer, being rather tall, and strongly made, with hands large but well formed. I had only one interview with him, but gained some additional information about his case from Mr Metcalfe Johnson, a medical practitioner in Lancaster. He had a sister who had also a very small head.<sup>1</sup> From a drawing which Mr Metcalfe Johnson had made of her, it appeared that she much resembled her brother. He always went by the name of Joe. He was 5 feet 9 inches 6 lines in height, and was 34 inches round the chest; but in measuring him we did not take off his shoes or vest. The measurements of the head were more carefully taken:—

<sup>1</sup> Mr Metcalfe Johnson gave some account of her case in a paper on the *Convulsions of the Brain*, which he published in the *Medical Times and Gazette*, during the year 1871.



1. Longitudinal, from glabella to occipital tubercosity, 11 inches =  $27\frac{1}{2}$  c.
2. Circumference,  $17\frac{1}{2}$  inches =  $44\frac{1}{2}$  c.
3. Transverse, from one tragus of ear to the other, 11 inches.
4. From tragus of ear to middle of forehead, 5 inches =  $12\frac{1}{2}$  c.
5. From tragus to occipital tuberosity, 3 inches 6 lines =  $9\frac{1}{2}$  c.

The head was cone-shaped, or oxycephalic, as Lombroso calls it; the fore part rather better developed than the occiput, though the forehead slanted rapidly backwards. He had a sallow complexion and a long red nose. The palate was not vaulted. He wanted many teeth, which he said had been "drawed out." He was said to be 45 years of age, but had no gray hairs. Until within the last eighteen months he had been able to get enough wages to maintain himself. I believe he had been sent to the workhouse on account of some violence which he had threatened or committed upon a woman with whom he lodged. In the workhouse he was a great hand at loading and wheeling a barrow. His manner was at first hesitating, as if he were afraid of being made game of, but he soon began to be more confiding, when the following conversation took place:—

*Q.* You are a tall fellow. How high are you?

*Joe.* I am eight feet. I once was taller.

*Q.* How long was that ago?

*Joe.* When I was a soldier.

*Q.* Were you a dragoon?

*Joe.* No; the cannons.

*Q.* The artillery. Then, were you a gunner?

*Joe.* No; I beats the big drum.

*Q.* How many men have you killed?

*Joe.* I broke an Irishman's back once, and buried him alive. I got half-a-crown a day for doing it.

Joe refused to give any further explanation of this exploit, which it was supposed referred to some fights between the English and Irish labourers during the construction of a railway line on which our friend worked. Joe then volunteered a piece of information which I was assured was correct:—

A gentleman once left me ten pounds; it was after he died.

*Q.* Were you glad he died, or sorry?

*Joe.* I was glad when he died.

*Q.* Why were you glad?

*Joe.* Because he went to Jesus.

*Q.* Would you like to go to Jesus yourself?

*Joe.* Yes, I would rather go to Jesus than to the other.

*Q.* Who is the other?

*Joe* (after reflecting a little). He has horns.

*Q.* Do you think you will go to Jesus yourself?

*Joe.* I thinks I will go to Jesus.

*Q.* Are you always good, and behave yourself?



*Joe.* The people sometimes teases me, and I gets in a rage. (And pointing to the governor of the workhouse, he added :) *He* tamed me. When the people makes a noise he speaks to them, and tames them.

Joe distinguished a fourpenny-bit from a sixpence. I asked him what piece of money he would like, and he replied: "Some gentlemans gives me a shilling. I keep it till I have a purse full of money." He could count his fingers, and said he had five toes on each foot; but did not seem to know much about divisions of time. He was easily puzzled, and said he did not know how many years were in a week. It will be seen that this poor creature had an intelligence, confused and superficial, but decidedly human in character. He had some notion of number, knew of a future state, and had a glimmering of moral relations. I do not know what amount of education he had received.

From a desire to keep up the unity of our Report, Dr Valenti's observations upon microcephaly have been put after those of Professor Lombroso on the same subject. We now return to the studies of the latter upon cretinism.

Professor Lombroso has made a study of twenty-three cretins, fourteen of whom were alive, and nine dead. He gives two very careful tables of measurements, but it is much easier to record the figures than to generalize the results. In one case we have a peculiarity, and in another the exaggeration of the very opposite tendency. Sometimes the stature is low; sometimes high; sometimes the head is of the normal size; sometimes it is larger than usual; at other times less. Deformities are very frequent; but they are of all kinds, so that one is inclined to believe that cretinism is owing to intoxication during the foetal state, which sometimes accelerates and sometimes retards the development of the organism. Nevertheless, the author thinks that he can make out a ruling type, which has the following features: "The weight is generally less than usual; the colour of the skin darker; the muscular force less; there is abundance of hair on the forehead; there is irregularity in the incisors and in the production and number of the teeth; the testicles are often wanting; the ears are longer; and the face smaller."

Only in three cretins was there an approach to microcephaly. "The most constant characters, which only failed in two cases, were the horizontal position of the basilar process; in four there is no occipito-basilar angle, but a straight line. This is the opposite to what we have in the negro, in whom the basilar bone slopes more than in the white man, and different from what we have in the anthropoid apes. The basilar process in its inferior and pharyngeal surface is concave in the cretin skulls. These are appearances which are only to be seen in the lowest species of monkeys and in quadrupeds. Finally, the hard palate is flattened, as in quadrupeds or in the foetus of the fourth month."



Some anomalies neither agree with the theory of evolution nor with that of Virchow; for example, the right orbit smaller than the left, the deficient closure of sutures, the arrest of the teeth in an infantile stage, the absence of some of them, the frequency of the Wormian bones, and all the contradictory appearances in macrocephaly and microcephaly, too early closures of the sutures, or absence of closure: these cannot be brought to support any theory. They evidently point to a foetal affection, which strikes one or other part of the embryo now in this direction and now in a contrary one.

The theory of Virchow, that all the facial and cranial anomalies of the cretin depended upon the early ossification of the spheno-basilar suture, was not found to hold good in many cases. Two examples were noted, one 12 years old, one 48, where there were traces of the connecting cartilage. The most curious contradiction of the theory of Virchow was observed in the skull of a cretin woman of 28 years old. She had been married and had borne children. The skull was asymmetrical in shape (right parietal plagiocephaly); the sutures were not closed. The palate bones were flat, and the canines protruding. The basilar process and the occipital condyles were wanting, and their place was supplied by two plates of bone like the inferior articular processes of the atlas, but narrower, as it were traces of an atlas which had amalgamated with the occipital bone. Thus, the first vertebra alone bounded the occipital foramen, which descended in a vertical direction. Only the upper part of the clivus remained; and it is clear there could be no ossification of the spheno-basilar bone when the basilar bone itself did not exist. Lombroso's measurements, however, confirm the assertion of Virchow, that the distance from the root of the nose to the occipital foramen is much shortened in cretins.

"On the whole," says the Professor, "the most constant characters of the cretin skull seem to me to be the distance between the two orbits, the shortness of the facial and of the basilar line, prognathism, the horizontal position of the basilar process, the appearance of the occipital foramen, the want of symmetry of the cranium, the flatness of the hard palate,<sup>1</sup> marked brachycephaly, the abnormalities in the development and position of the teeth. Some of these characters are neither human nor anthropoid, but are met with as abnormalities or constant characters in the quadrupeds and lower monkeys. From some statistics detailed, Lombroso concludes that the "cretino-genetic miasma" lowers the standard of height in the general population of the districts where goitre and cretinism are rife.

Lombroso thinks that a greater tendency to acts of violence, extravagant behaviour, and cunning, are more common in places where cretinism abounds. Ferrus has made similar observations in

<sup>1</sup> This forms a good ground of distinction between cretinism and what I have called congenital idiocy, in which the palate is generally vaulted.



France, and thinks that people in localities where this form of idiocy is common are more inclined to go to law. In Switzerland, there is a proverb that stammering in the parent announces cretinism in the child. Deafness also prevails in districts where cretinism is rife. In Aosta there is a deaf mute to every 197 inhabitants; in Sondrio, one to every 365; in Alessandria, one to every 2297; and at Novara, one to every 4933. The morbid cause of cretinism is thus shown to exert its influence, not only upon individuals here and there, but upon the whole population, modifying the stature, the moral character, the prevalence of crime, the pronunciation, and the hearing; thus affording a very striking example of the modifying influences of external circumstances. Many details given by Lombroso have been passed over, though the most important conclusions have been reproduced. The following two Tables will be thought valuable by those who take an interest in the study of cretinism:—

TABLE I.

	Fontanetti, Maniacal Cretin.	Cocchi Francesco.	Male Cretin.	Panighini, Suicidal Cretin.	Cretinous Woman.	Cretinous Woman.	Cretinous Man.	Cretinous Man.	Cretinous Boy.	Angela Protti.	Magnani Maria.	Mirabello, a Cretin of 22 years.	Male Cretin of 17 years.	Camillucci Antoni, Male Cretin of 47 years.
Age, . . . . .	50	37	47	35	30	29	28	40	12	24	23	22	17	37
Height, . . . . .	Met. 1'35	Met. 1'32	Met. 1'48	Met. 1'68	Met. 1'32	Met. 1'31	Met. 1'26	Met. 1'53	Met. 1'10	Met. 1'25	Met. 1'53	Met. 1'50	Met. 1'44	Met. 1'50
Weight, . . . . .	Kil. 37	Kil. 35	Kil. 52·70	Kil. 57	Kil. 44	Kil. 41	Kil. 39	Kil. 55	Kil. 24	Kil. 32	Kil. 56	Kil. 58	Kil. 46	Kil. 50
Circumference, . . . . .	Mil. 520	Mil. 510	Mil. 540	Mil. 510	Mil. 530	Mil. 530	Mil. 550	Mil. 540	Mil. 510	Mil. 480	Mil. 550	Mil. 530	Mil. 560	Mil. 530
Antero-posterior curve, . . . . .	320	540	...	360	330	320	320	300	315	330	340	330	340	330
Biauricular curve, . . . . .	300	300	290	320	310	310	320	310	300	260	300	280	300	275
Breadth of forehead, . . . . .	130	140	140	170	170	90	160	160	80	50	140	120	120	160
Height of forehead, . . . . .	40	45	40	41	70	50	40	40	25	30	40	50	30	50
Longitudinal diameter, . . . . .	190	200	200	200	175	181	188	181	177	174	190	190	195	180
Transverse, . . . . .	154	155	170	165	150	154	152	154	142	155	165	152	160	148
Bimastoid, . . . . .	...	145	...	165	160	160	146	150	140	136	...	142	137	137
Bizygomatic, . . . . .	126	130	...	140	142	135	130	140	127	129	136	137	132	130
Fronto-mental, . . . . .	134	170	200	200	175	150	175	200	165	200	185	182	135	221
Occipito-mental, . . . . .	223	210	224	240	225	216	225	...	211	...	226	217	224	216
Length of ear, . . . . .	55	35	63	59	...	65	71	85	...	...	65	65	61	80
Breadth of ear, . . . . .	25	36	23	42	...	30	42	36	...	...	27	46	35	40
Length of arm, . . . . .	230	260	300	335	128	300	295	290	195	235	380	330	300	280
" forearm, . . . . .	180	...	240	250	220	250	240	250	281	160	230	240	210	240
" hand, . . . . .	144	140	160	190	160	...	168	160	140	130	180	170	150	170
" thumb, . . . . .	50	42	70	70	...	60	50	...	54	50	57	57	45	60
" index, . . . . .	62	50	81	87	...	90	110	...	105	...	71	105	70	80
" middle finger, . . . . .	60	78	...	96	...	95	...	...	92	...	73	70	78	88
" ring finger, . . . . .	70	71	...	94	...	90	...	...	86	...	...	82	82	76
" little finger, . . . . .	50	50	...	60	...	70	...	...	68	...	72	60	57	70
" thigh, . . . . .	395	360	...	380	...	...	...	...	...	...	390	...	350	330
" leg below knee, . . . . .	340	270	...	400	...	...	...	...	...	...	390	320	330	330
" foot, . . . . .	130	120	...	235	...	...	...	...	...	...	220	230	220	215
Distance of auditory meatus to chin, . . . . .	130	126	102	150	100	140	150	160	130	...	...	160	160	150
Distance to bregma, . . . . .	130	120	...	160	190	190	180	180	144	...	...	161	150	190
Distance to root of nose, . . . . .	128	110	116	130	130	130	120	140	121	...	115	128	132	130
Distance from nasal septum to alveolar margin, . . . . .	12	15	...	14	15	21	22	...	65	...	...	19	22	20
Force with fist, . . . . .	25	40	...	80	60	40	65	...	28	...	60	60	...	...
Traction force, . . . . .	38	10	...	...	16	20	10	...	6	...	50	12	...	...







Gazzaniga had the basilar apophysis completely horizontal, with traces of the speno-basilar suture still remaining. The palate bones were very flat.

The female cretin of 12 years had the speno-basilar cartilage still unossified. The basilar process was vertical, and the superior canines were still in the alveolus.

The libidinous cretin of 25 had a very prognathous face, of which the outline is given.

The cretin of 36 (Leva) had a goitre; generative organs deficient.

Through the kindness of a friend, we have received a copy of the *Sperimentale* of Florence,<sup>1</sup> containing a full account of the case of Antonia Grandoni, already mentioned in our two preceding reports on microcephalic idiocy. She died February 1872, aged 41, of pyæmia.

The examination of her body was made by five medical men; and the description of Dr Roberto Adriani occupies twenty pages of the *Sperimentale*. Her father was a boatman; her mother was a woman of small stature, who died of consumption. Before and after giving birth to Antonia she had several children, male and female, who were quite healthy in every respect. There was nothing in the family history indicating any unusual morbid tendency. Antonia was small at birth, with a small head. The fontanelles were noticed to be distinct, but were thought to contract sooner than usual, and eclamptic convulsions followed. The head, which had increased at first, soon stopped growing, and the disproportion between the size of the head and the face became marked. She was not much later than usual in beginning to walk and speak, but her intelligence was inferior to children of her age. She, however, learned in time to do easy work in the house, and to go out of doors to buy provisions. She was of a gay and sociable disposition, was fond of learning amorous poetry, and showed erotic tendencies. On getting older she took to wandering about, and might be seen dancing with grotesque movements to her own singing.

For many years she led a wandering life, an object of curiosity, of pity, or of ridicule to all. At last she was removed to the hospital where she died. There was nothing peculiar about her person saving the smallness of her stature, she being no higher than 52 inches. Her weight was 30 kilogrammes. She had good sight, very quick hearing, an exquisite sense of taste and smell, and the sensibility of the skin was normal on both sides. The walk was slow and hesitating; but she was a good and agile dancer. She was gay and sociable in her disposition, and never complained, except for bodily pain; but the idea of death disturbed her. She was always quiet and obedient, and

<sup>1</sup> Lo Sperimentale, Giornale Critico di Medicina e Chirurgia. Firenze, 1872, Ottobre.



when hindered doing anything, she showed grief, but no resentment. She felt for the sufferings of others. She knew that her head was small, and an object of attention. She was very careful in her dress, and was fond of attracting the notice of the other sex. She remembered those who were kind to her, was glad to see them, and would go in search of them when they did not appear. When visitors came to the hospital, she desired to be noticed, and was disappointed if she were neglected. She was fond of talking about marriage; liked singing and dancing; could play well upon the cymbals, and was anxious to get her companions to dance to them. She showed a good memory for names of persons and things, remembered places and bygone events; but had no memory of time. She answered questions satisfactorily, adding information without being asked. She had the sentiment of good and evil, and made sensible remarks upon the conduct of her companions. She was religious through imitation and habit, and behaved well in church. Every attempt to instruct her was without success.

It appears from this account, which I have almost literally translated, that Antonia's imbecility was more decided than one would think from the shorter account of Professor Cardona. The description of her mental powers might yet be more complete; one would especially like to know what knowledge she had of numbers, and what was the nature of the attempts at instruction which failed. I have little doubt that, by a well-planned education in childhood, her mental powers could have been considerably increased, and her wandering and erotic tendencies repressed. Apparently she was a poor neglected creature; but even at the worst, her mental powers appear very extraordinary, if compared with the smallness of the brain. The whole body seemed to have been examined, but no anomalies were noted, save that the pelvis was somewhat narrow, and the coccyx turned to one side. A large number of measurements of the head are given, some of which we reproduce; but in default of a translation of the whole paper, it will be better to miss over what seems of less moment, and give the most important details in full.

#### *Cranio-Facial Measurements.*

			Millimetres.	Inches.	Lines.
External circumference,	-	-	332	= 13	0
Internal circumference,	-	-	303	= 11	6
External longitudinal diameter,	-	-	117	= 4	4
Internal do. do.,	-	-	105	= 4	1
Distance from the anterior margin of the occipital foramen to the alveolar margin,	-	-	90	= 3	5
Length of palate,	-	-	47	= 1	6
Breadth „	-	-	30	= 1	1



			Millimetres.	Inches.	Lines.
Breadth of orbits,	-	-	30	=	1 1
Height	-	-	30	=	1 1
Cranial capacity,	-	-	370	c.c.	
Cephalic index,	-	-	75		
Cephalo-orbital index,	-	-	10.27		

An engraving of the craniographic profile of Broca is given, and there is a portrait of Grandoni in the pamphlet of Cardona already quoted. The frontal angle is only diminished by  $4^{\circ}$ ; the parietal angle by  $29^{\circ}$ . The occipital angle is, on the contrary, increased by  $9^{\circ}$ , so that the total diminution of the cerebral angle is reduced to  $24^{\circ}$ .

All the sutures were found closed, and taking this in connexion with the eclamptic fits, Dr Adriani views this premature closure as the cause of the microcephaly; but much could be said against this explanation, which cannot hold good in many cases.

Amongst all the contents of the cranium, the hemispheres were the least developed. The pons, the medulla oblongata, the tubercula quadrigemina, the peduncles, and the cerebellum, fell much less below the ordinary dimensions. The greatest breadth of the brain at the middle was 85 millimetres, and 68 millimetres at the base of the anterior lobes. The cerebral hemispheres were perfectly symmetrical; they were 100 millimetres in length, and were shortened posteriorly, so that the cerebellum was left uncovered for about 70 millimetres. The fissures of Sylvius and of Rolando were well marked. All the cerebral lobes were small; the parietal and occipital were smaller in proportion to the frontal and temporal lobes. The sphenoidal and the anterior and posterior central convolutions were also proportionally well developed. The convolutions of the frontal and temporal lobes were more complicated and better developed and more numerous than those of the parietal and occipital. The most notable anomaly of the brain was a shortening and slight thinning of the corpus callosum. The dura mater was thicker than usual, and the gray substance appeared to the naked eye in relatively greater quantity. The microscopic examination of the brain, very carefully made by Dr Luigi Severini of Perugia, gave the following results:—

I. No remarkable difference was found in the structure or proportion of the nervous corpuscles, either in slices taken from the posterior parts of the cerebrum where the development appeared arrested, or from the anterior parts.

II. There was a remarkable abundance of fundamental tissue, especially in the cortical matter of the brain, which made the nerve-cells appear scarcer than usual. This tissue, which was thought the same as the neuroglia of Virchow, is described as being turbid, through the small points of obscure molecules uniformly diffused, and taking on a faint colour through imbibition. After prolonged maceration in a weak solution of acetic acid and separation with needles,



this fundamental tissue, viewed with high powers, appeared to be composed of cells with very small nuclei, many of which had very fine processes, so as to resemble the appearance of the cells of the conjunctiva.

III. The prevailing form of nerve-cell in all the slices examined was the triangular one, with an oval or round nucleus. Few displayed the pyramidal form.

IV. The structure of the bloodvessels appeared normal, if anything they were somewhat larger than usual; and the perivascular lymphatic spaces were very clearly seen.

The whole encephalon weighed 289 grammes; the cerebrum 238 grammes; the cerebellum, pons varolii, and medulla oblongata, 51 grammes. Thus, the weight of the brain did not correspond with the cranial capacity. This agrees with the observations of Waisback, who found that the weight of the brain and the capacity of the skull do not keep a parallel relation, and increase by a different percentage. On the other hand, it helps to show the fallacy of the mathematical formula of the anthropologist Davis, made to determine the weight of the brain from the cranial capacity, calculating the appendages of the brain as  $\frac{1}{100}$ , and the cerebral mass as  $\frac{8}{100}$ , and its specific weight as 1.40. The absolute weight of the encephalon ought in this case to have been much greater.

The measurement of the convex surface of the brain gave an approximate extension of 1131 square millimetres. This confirms the observations of Wagner, who found that the diminution of weight did not correspond with the diminution of the surface of the brain. As Dr Adriani truly remarks, this case is unique, if we consider the extreme smallness of the cranium, the small weight of the brain, the advanced nervous organization, and the evolution of the intelligence. Passing over his comparison of the external measurements, we find that, among the cases published, Wagner had one whose brain weighed 300 grammes; Griesinger, one of 576 grammes; Theile, of 294 grammes; Gore, of 283 grammes; Marshall, of 238 grammes in a male idiot ten years old. Gaddi, Bastianelli, and Lombroso have given cases where the weight of the brain was between 300 and 400 grammes.

In none of these did the intelligence approach that of Grandoni; indeed, if I remember rightly, in all these instances the mental power was of the lowest. Any one who compares the cranial capacity of a few microcephalic idiots with the intellectual manifestations, will hardly fail to notice that the one does not bear any definite proportion to the other. Take, for example, the case of the microcephalic boy described by Dr Maclaren,<sup>1</sup> a creature almost devoid of intelligence, and the lively little fellow described by Dr

<sup>1</sup> See Dr Maclaren's paper, in the *Edinburgh Medical Journal* for October 1874; and a report of Dr Shuttleworth's one, in the *British Medical Journal*, 28th August 1875.



Shuttleworth at the Edinburgh meeting of the Medical Association, and he will at once acknowledge that there must be some other difference than that of mere size, especially as the head of the first case was larger than that of the second. The cerebral substance must sometimes be inferior in quality as in quantity. In some cases the brain-tissue is healthy, or nearly so; in others it is not. This is a perplexing consideration, when we come to study microcephaly, but it is one which cannot be overlooked. Dr Adriani is disposed to think that the brain-tissue of Grandoni was healthy; and he is perhaps right in laying little stress upon what was seen through the microscope, the scarceness of the nerve-cells in proportion to the neuroglia or fundamental tissue; for the import of such appearances is not yet clearly understood.

"It does not require," observes the author, "a close examination to find the principal characteristics which distinguish the convolutions of man from those of the ape. In the brain of our microcephale, we do not find the perpendicular fissure which divides the brain of the anthropoid ape into anterior and posterior parts. The inferior surface of the frontal lobe is flat, and the convolutions, in their division, volume, contour, and disposition, have the form of the human type. An examination of the brain strengthens the conclusion that microcephales do not represent a degeneration in the sense of retrogression to the organic type of certain apes, but rather an arrest of development without aberration from the typical laws of organic formation through a pathological cause." Dr Adriani shows that other observers have found that diminution of the posterior cerebral lobes, and a shortening and thinning of the corpus callosum, are the most constant characteristics of the brain of microcephalic idiots.

He remarks that the defective development of the occipital and parietal lobes did not in this case appear to affect the intelligence, and quotes a case from Griesinger where there was a moderate and symmetrical diminution of the size of the posterior lobes, so that the cerebellum was in part uncovered; but the young man, far from being an idiot, was endowed with unusual intelligence. In more ways than one does this singular case perplex previously-conceived theories on the functions of the brain.



