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CRETINS AND CRETINISM;

A PRIZE THESIS

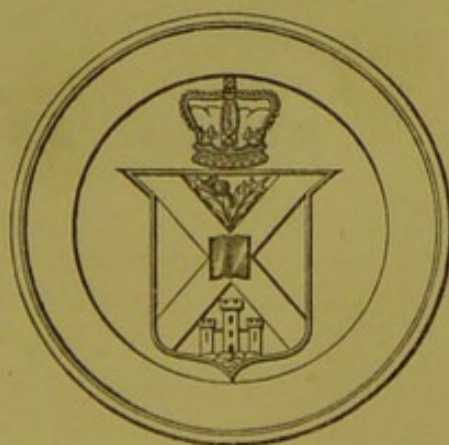
OF THE

UNIVERSITY OF EDINBURGH,

BY

GEORGE S. BLACKIE, M.D.,

CURATOR OF THE BOTANICAL SOCIETY OF EDINBURGH.



EDINBURGH: MACLACHLAN & STEWART.

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CRISTIAN AND CRISTIANISM

THE PRIZE ESSAY

1874

UNIVERSITY OF EDINBURGH

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GEORGE A. BLAIR, M.D.

OF THE UNIVERSITY OF EDINBURGH



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1874

TO
JOHN HUTTON BALFOUR, M.D.,
F.R.S.E., F.L.S., &c. &c.
PROFESSOR OF MEDICINE AND BOTANY
IN THE
UNIVERSITY OF EDINBURGH,

THESE PAGES ARE DEDICATED

AS A
MARK OF THE RESPECT AND ESTEEM
OF HIS LATE PUPIL

THE AUTHOR.

EDINBURGH, Dec. 1855.

“Hinweg, hinweg mit diesen Gespenstern
Zeige die Blume mir doch, zeig’ mir ein Menschengesicht !”—GOETHE.

“Causa latet, vis est notissima.”—OVID.

“There is no condition of life utterly hopeless ; and wherever there is mind,
there is no imprisonment from which it may not be freed.”—KITTO.

“Let us then be up and doing,
With a heart for any fate ;
Still achieving, still pursuing,
Learn to labour, and to wait.”—LONGFELLOW.

SUMMARY.

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1. The first part of the book is devoted to a general survey of the history of the Christian Church from the time of its origin to the present day. It is divided into three main periods: the first, from the time of Christ to the fall of the Roman Empire; the second, from the fall of the Roman Empire to the Reformation; and the third, from the Reformation to the present day. Each period is further divided into smaller sections, and each section is headed by a chapter number and title.

17. The second part of the book is devoted to a detailed account of the life and teachings of Jesus Christ. It is divided into two main sections: the first, a narrative of the life of Christ from his birth to his death; and the second, a collection of his sayings and teachings. The first section is further divided into chapters, each headed by a chapter number and title. The second section is divided into sections, each headed by a section number and title.

18. The third part of the book is devoted to a detailed account of the life and teachings of the apostles. It is divided into two main sections: the first, a narrative of the life of the apostles from their calling to their death; and the second, a collection of their sayings and teachings. The first section is further divided into chapters, each headed by a chapter number and title. The second section is divided into sections, each headed by a section number and title.

CRETINS AND CRETINISM.

As greatly as the surface of our world is diversified by the appearances of continents and seas, mountains and valleys, rivers and lakes, so greatly, a very slight survey will serve to show, the inhabitants populating it vary in their physical and mental endowments. These diversities, which may be enumerated as complexion, height, the activity of the mind, and more particularly the configuration of the head and the cast of the features, are found to be confined to certain localities. This naturally leads to the conclusion that such appearances are characteristic of different nations, the offspring of different races.

From this has sprung up, in modern times, a new science, entitled Ethnology, or the physical history of man, which science, while yet in its infancy, endeavours to classify those changes which we meet with, and attempts to discover the early origin of the human race. The greater number of Ethnologists are agreed that all the different appearances which we meet with in man, are the varieties produced from one common stock; in like manner as we find among the lower animals the infinite varieties of the pig and of the dog, are new conditions accommodated to circumstances, and which, if allowed to run wild, and thus get rid of the influencing circumstances, would return to the form of the original stock, and so prove their descent from it. How many such great varieties of the human form there are to be distinguished, it would be difficult, in the present state of the science, to tell; but there are five chief headings

formed by Blumenbach, viz., the Caucasian, Mongolian, Ethiopian, American, and Malay. Each of these may be subdivided into other varieties, into nations and families, each possessing their distinctive peculiarities,—peculiarities, however, not important enough to be considered as distinctive of a race.

Education, manners and customs, diet and climate, have certainly a very great and undeniable influence on the structure of the human body. It is then from these, and similar external influences, that we have to deduce the many varieties which we encounter. This variety is peculiarly striking when we compare the inhabitants of distantly situated lands with each other, when we find that in one land the strong peculiarities of another are not to be traced, the less so, the greater the distance that lies between them. But this distinctive barrier between nations is less marked the nearer their lands approach each other, and, on the nearest approach, the distinctions seem to melt into one another, and gradually to vanish. From the North Pole to South of the Equator, we find the human race changed indeed very materially, but easy as it is to show the marked difference existing between a Caffre and a Greenlander, yet we should find it a very difficult task specifically to distinguish the steps by which the nations between the two are gradually blended into one another. We find the white pure complexion of our own country pass in imperceptible steps, from nation to nation, through the yellow, red, and brown complexions, to the glossy black of the negro. This imperceptible transition depends, no doubt, on the perpetually changing, and gradually following one another, new external influences. At the Poles we possess the lowest degree of natural temperature; this becomes by insensible degrees higher as we travel towards the Equator, till we reach a point which we know as the Temperate Zone, and from this to a drier and purer climate, to a thinner air, until we arrive at the highest degree of temperature in the Torrid Zone. This change of temperature, so decidedly marked, must then in itself exercise a considerable influence

on the inhabitants, and, besides, from its influence over the animal and vegetable worlds, it of course alters their mode of diet and life in general, which alterations are, no doubt, those which originally caused the great varieties of the human race, descended from one stock, as we believe it to be. But still more striking changes occur when there is no such change of latitude, when we find that other causes alter the soil, air, climate, and provisions, such changes as those effected by mountain chains, as, for example, in the Cordilleras, where, on the west coast towards the Pacific Ocean, the people are fair, while, on the other side, brown and copper coloured, like the other American races; the former being protected by the mountains, and the latter exposed to the hot burning sands.

On a smaller scale, but in a more marked manner, changes occur in the human race in mountainous districts. Nowhere, perhaps, are the effects of external influences on our frame, within a small district, so observable as in these. Mountaineers form a class distinct from those of the low countries, as we see in a marked manner in Scotland, and indeed in all hilly countries. But even among the inhabitants of the mountains themselves the variety is great. As we find that at the top of high mountain chains nothing exists but fields of snow and masses of ice, which the sun of centuries has not melted; that some thousands of feet below a few lichens begin to clothe the bare rocks, forming the commencement of vegetation; that then, by the influence of those lichens and the atmosphere, the rock becomes disintegrated, and a fine sand is produced, in which a hardy Saxifrage or Gentian makes its appearance; that this sand, and the decayed flower, is washed down, and affords nourishment for another and more delicate species, inhabiting the higher alpine valleys, and that, descending still, we meet with shrubs and large herbs, and trees; so we find changes in the form of man at the different elevations, as equally marked as those of the vegetation by which he is surrounded. In those highest alpine meadows, immediately bordering upon the region of perpetual snows, where the little Gentian

and the Soldanella raise their heads among the scanty herbage, men, herdsmen and shepherds, a strong and hardy race, are to be found. But here is no fit place for the residence of man. As autumn draws on, they must leave their temporary abodes, and go deeper into the valleys, when, as they say in Switzerland, "*die Alp ist abgeweidet*," the Alps are eaten up.

Deeper down in the valleys, where the Rhododendron marks the vegetation, we find two or three houses collected together, forming a village, where these men live, perched as in eagles' nests, upon the cliffs, behind some trifling protection from the thundering avalanche, and hidden a great part of the year by mists. Of such villages are many in Savoy, Tyrol, the Grisons, and the Valais. The inhabitants of these high quarters are remarkable for their bodily size, their activity, ingenuity, and mental abilities, strengthened and sharpened by the cold and wind.

We now dip deeper into the valleys, where the rivers are larger, the air milder and denser, and here we have a richly wooded vegetation, and gradually the healthy appearance and bodily strength of the inhabitants seems to give way, so that, in the deepest valleys, by the river sides, as, for example, by the Rhone, in Lower Valais, we find sluggishness, ugliness, weakness, and various diseases to be characteristic of the people.

Of these diseases, a soft, projecting, elastic tumour, occupying the front of the neck, called Bronchocele or Goître, is the commonest, and is, indeed, almost characteristic of some of the subalpine districts of Switzerland, Tyrol, and the whole of the south of Europe. For this complaint many causes have been assigned; such as, the straining occasioned by the carrying of heavy weights on the head; the congestion of the head and neck attendant on much climbing of hills; the constant drinking of snow water and melted ice; the confined state of the valleys, and many more. Such opinions have all their supporters, both in facts and persons, and have all objections. We find, for instance, in the valleys of the Rhine, say near Bonn,

Bingen, or St. Goar, or on the Moselle, where goître is frequent, that the people carry weights on their heads, but the disease is commoner far in the Valais, where the burdens are borne on the back. The inhabitants of the Upper Rhone valleys, no doubt deriving their water from that stream, do drink melted snow and ice, and have goîtres, but the same remark does not apply to the neighbourhood of Trêves, the Ahr valley near Bonn, or to Derbyshire, where goître is also common. The popular belief in many places lays the blame on the waters, and we find, more especially in Styria,* wells from which the inhabitants fear to drink, or, having by any accident drunk out of them, *they rush to an antidotal well to counteract the bad effects.* Whatever the first well may contain, we find the second to abound in Iodine, which would seem to be Nature's specific for the complaint. Captain A. Gerhard, however, in his travels in the Himalayah Mountains, says that "although the Kurrawurrees can get nothing but snow for some months in the year, they are not so subject to goître as the people who live in the damp grounds in the forests at the foot of the hills, where there can be no snow water." Again, in many of the countries mentioned, in Styria, in Tyrol, in Switzerland, in the Eifel, on the Rhine, or in Derbyshire, where goître is very abundant, it is found coupled with a peculiar formation of the valleys. These are, generally speaking, narrow and much enclosed, and forming series of amphitheatres with two modes of exit, or, it may be, only one. Here the air is not affected by many ordinary winds, the spots are almost always calm; and there is but little motion or current in the lower atmosphere. This is held by some to account for the disease, but it is at once set aside by the fact that there are many such valleys, as in Scotland, where goître is rare and unknown, and, besides, that it occurs abundantly in plains, as in the plains of India, where there are no hills whatever. Some again have imputed the disease to low diet; but this

* Kohl's Travels in Austria.

is met by the objection that low living is found in every country and climate, and in its worst degree, without our finding any such result to arise from it. The most probable hypothesis is that which regards the origin of the disease as being connected with the geological structure of the countries in which it occurs. This idea has been maintained by many authors, and is now the generally adopted one; but, as we shall afterwards find, it is insufficient, and not applicable in all cases, although, when taken along with other data, it must be regarded as the best explanation. Others have attributed the disease solely to the want of Iodine and Bromine in the water; but this may be viewed as a branch of the former hypothesis.

But this, although at the same time allied to it, is somewhat apart from our subject, but we shall return to it in the consideration of the next, the highest degree of evil to which the inhabitants of the lower valleys are subject. This is CRETINISM. By the word *Cretin*, we understand "a being deformed and distorted, an abortion of man, peculiarized by a pale leaden colour of the face, by a flaccidity of the flesh, an unexcitable nature, and extraordinary amount of laziness and inactivity, and inability to speak or utter inarticulate sounds, and generally with very large goîtres, a circumstance which has led to a much misunderstood connection of the two complaints." Cretinism may be looked upon as being the highest stage of Idiocy, although it differs from it, in having a vitiated state of the body, in conjunction with the loss of the faculties of the mind. Thus it is composed of two distinct elements,—the one, Idiocy, the other, bad habit of body.

The derivation of the name is obscure. M. Virey, in the *Dictionnaire des Sciences Médicales*, derives it from *Chrétien*, because, he says, the individuals affected with Cretinism, (and called also *Cagots*), are simple and humble, and are revered as very pious personages in the valleys of the Alps. The Turks, he adds, honour idiots from the same cause. I am not inclined to favour his derivation, but would rather uphold the following. The inhabitants of the countries in

which Cretins are found, invariably pity, and talk of them as "poor unfortunate creatures." The term "*elendes Geschöpf*" is universal where the German language exists. This term I find to have come probably from the Canton Valais, where they are spoken of as "*Cretin*" and "*Créateur*," and indeed the word "*Creatur*" is frequently applied by the Germans also. From this we may conjecture that the word "*Cretin*" is derived from the Latin "*Creatura*," and a connecting link between the two is afforded us by the Romansch, that extraordinary language of the Grisons, the nearest step to ancient Latin now existing, in which the name is "*Cretira*," having exactly the meaning of the German "*Geschöpf*." Thus we form—*Creatura*,—*Cretira*,—*Cretin*.

The name "*Cretin*" has been adopted in the English and German languages; but there are other provincial names by which they are known, all having a similar meaning, and derived from some peculiar feature in their appearance. Thus, for example, in Carinthia, they are called "*Tockern*;" "*Tosten*" in Styria; "*Trotteln*" in many parts of Austria; "*Talken*" in the Tyrol; "*Totteln*" in Salzburg; "*Fexen*" in Wurtemberg; and "*Lallen*" in various other countries, the last term being in imitation of the sound of the voice.

In the discussion of the facts relating to this abortion of man, I purpose saying a few words, *first*, with respect to their geographical distribution; *secondly*, on their appearance and peculiarities; *thirdly*, on the cause of the disease; and, *fourthly*, on the mode of alleviating it.

I.

And, *first*, as regards the geographical distribution.

I have already said that the region in which Cretins are found, is rather the subalpine than the alpine, and the places themselves are, for the most part, dens of disease, in the highest degree disagreeable to live in, and oftentimes, despite the beauty and attractions of their situation, dreadful

to behold, from the filth, want, and destitution with which they abound. Where, from amongst the upper gorges of an alpine chain, a river, reaching a flattened valley, slowly permeates it, and o'erflowing its banks, sends up exhalations into the atmosphere, and renders the whole soil damp, and the air humid; and where this air is shut in on all sides by high rocks and mountains, at the foot of which are villages full of dirt and uncleanness, houses closely packed together, and the people poor, and but ill supplied with the very necessities of life; where the winter snows almost fill up the valley, and the summer sun, hot and fiery, burns up the produce of the earth, there do we find the Cretin. Such is the case in Styria, in the Canton Valais, and on the Sardinian side of the Great St. Bernard, where they exist in almost incredible numbers. It is difficult to say anything in allusion to the distribution of Cretinism, without, at the same time, considering that of goître. The latter has a connection with the former, though an ill understood one. The two generally occur together. Where Cretinism is very abundant, there goître never fails. But the reverse is not the case. Bronchocele often exists where there are no Cretins. The endemic disease of Cretinism is confined to a few spots on the globe; while Bronchocele is endemic in many countries. But where Cretinism is endemic, almost all Cretins have goîtres, and generally large ones. There are Cretins in Switzerland without goîtres, but they are rare. Dr. Watson, in his "Practice of Physic," mentions that where both parents are goïtrous for two-generations in succession, the offspring of the third generation is a Cretin. How far this is true, I cannot say; but it is certain that when Cretinism is found to have sprung up endemically in any place, Bronchocele is also found to have been its forerunner. They must then have some cause in common, or they act in combination. Cretinism occurs very abundantly in Styria, Upper Styria being its apparent head quarters. From this point it disappears suddenly to the south, and spreads northwards towards Salzkammergut, (where it is said to exist, though I have found no trace of it, although abundant goître), and

Salzburg, decreasing gradually till it reaches the broad plain of Bavaria, where it ceases almost completely. In Linz there are no Cretins, in the town of Salzburg they are occasional. It occurs in some parts of the Tyrol, where goître is universally common, and also from the northern frontiers of Venetian Lombardy a case or two have been recorded. In Savoy the disease is extremely common, in so much so, that in Aorta, St. Pierre, and Morges, there seems to be a case in almost every one of the diseased and poverty stricken families. It occurs also in the Pyrenees, where it appears to be somewhat anomalous, as, according to Ramond, it was found "in the open, well watered and well ventilated valleys." In Algeria, and in the hilly parts of China, in the Himalayan Mountains, and in other parts of Asia, its occurrence is recorded. Sir George Staunton mentions its occurrence in Chinese Tartary. And Mr. Marsden, in his History of Sumatra (1789) mentions having seen the malady in that island. But it is in the Alps of Switzerland that it has been most observed, not perhaps because it is in reality more prevalent there, but because there have been most observers. Here its distribution is general and definable. M. de Saussure mentions, in the "*Voyages en Alpés*" that he found the disease of by far the greatest frequency in the Vallee d'Aoste, which reaches from the foot of M^t. Blanc to the Plains of Piedmont. The Rhone, rising in the glaciers near the Furca at the head of the Canton Valais, runs almost directly southward through a valley enclosed by the steepest hills, and, in general, between three (English) miles, and one and a half broad, at the end of which it flows into the Lake of Geneva. At the very mouth of this valley, at Villeneuve, near Chillon, just where the river enters with its broad and almost stagnant mouth into the lake, we seem to recognize a new country. For already we find the people with a pale dirty-yellow complexion, and with large goîtres. But these people, although stupid and dull, yet retain some sense, and are not Cretins. But as we ascend the river, a few miles distant, at L'Aigle and Bex, we find real Cretins, as regards intellectual powers, little removed from beasts. Deeper

and higher in the valley they increase, and at Martigny are more abundant still. But some little distance higher on the St. Bernard, at Liddes and Bourg, we find no further trace remaining. In the neighbourhood, in the north of Savoy, they are occasionally found, but rarely in St. Cluse, Salenches, and Bonneville. This circumscribed district seems then to be the great theatre of its distribution in Switzerland, although found in many parts throughout the rest of the country. I have encountered an example on the Greater Scheideck, in the Bernese Oberland, but have little doubt, from the inquiries I made about him, that he was brought from Valais for begging purposes. In Bellinzona, on the north arm of the Lago Maggiore, examples occur. In the Grisons, I believe they are not at all uncommon, though not affected to a very great degree, occurring chiefly on the borders of the Canton with that of Glarus, and the valleys of the Rhine. In Canton Aarau (Argovie) they are not unfrequent; and, on the whole, among the 2,188,000 souls, who form the population of the Swiss Confederation, no less than 20,000 persons are calculated to suffer, in a greater or less degree, from the disease. These, according to a report published lately at Genoa,* are thus distributed:—

In the Canton Valais, there is 1 Cretin in 25 inhabitants.				
District Moudon, (Canton de Vaud),				
	1	"	27	"
Canton Uri,	1	'	83	"
Canton Argovie,	1	"	167	"
Canton Grisons,	1	"	266	"
Canton Glarus,	1	"	375	"

Returning to the examination of the rest of Europe, we find that the disease is endemic in various parts of Rhenish Prussia. An island named Niederwörth in the Rhine, a mile and a half below Coblenz, is a remarkable example. On

* "*Raccolta di Relazioni, &c., concernenti lo Stabilimento dell' Abendberg.*"

this small island no fewer than 40 among 750 inhabitants were found. In the vicinity of the Lake of Laach, near Bonn, there are many in all stages; and in one of the villages of that district, in 300 inhabitants there are 22 Cretins and Idiots.—In the Grand Duchy of Baden, the report of the Sanitary Commission of 1847, mentioned the occurrence of 490 Cretins, chiefly in the Black Forest and the Odenwald. As regards Sardinia, the royal reports on Cretinism give the following results. The population of the country is 4,125,740, of whom about the half live in the hilly district where Cretinism is endemic. Here we have 7084 Cretins, besides many half Cretins, of whom 3500 are in Savoy, 1400 in Maurienne, and 2180 in the Valley of Aosta. But Dr. Guggenbühl considers that this report is not complete, that many of the districts were not completely searched; and he agrees with Dr. D'Espire of Geneva in calculating the number at 10,000 and upwards. In Bavaria, according to Professor Virchow, in Lower Franconia, in half a million of inhabitants, there are at least 200 Cretins. In the highlands of Bavaria the disease is still more common, though not statistically reported. In Austria the disease is very abundant. According to Dr. Schausberger, along the banks of the Danube in Upper Austria, the disease is so universal that whole families consist only of Cretins and half Cretins; and to such an extent, that in villages of from four to five thousand inhabitants, not one man was found capable of bearing arms. On examination, 6000 Cretins of the worst kind were found in Steiermark. According to Professor Langers, in the different provinces of Austria the number of Cretins stands thus:—

In Judenburg	1 in 53 inhabitants.
— Brück	1 in 74 “
— Gratz	1 in 150 “
— Marburg	1 in 374 “
— Cilly	1 in 516 “

In Wurtemberg it is calculated there are about 5000 affected with the disease. In Denmark, too, a considerable number of Cretins exist among the 2000 idiots of the popu-

lation. In Norway there are also 2000 idiots; but even among mountains bearing the strongest resemblance to those of Switzerland, bodily deformity is by no means so prevalent. In several parts of France Cretins are also mentioned as occurring, as in the department of Vosges, &c. When statistical inquiry is directed to the subject, I have no doubt that among the many idiots of England, Scotland, and more particularly of America (as in the State Massachusetts, where there is an idiot in almost every 200 inhabitants), many Cretins will be found; and, from personal observation, I will add to this geographical sketch, the occurrence of Cretinism near Edinburgh, and in the Highlands of Scotland.

Now, in nearly all these places where I have mentioned Cretinism as occurring, *Goître* abounds; but there exist many districts and countries among the Alps and elsewhere, where almost all the inhabitants are *goîtrous*, and yet not one Cretin exists. I have frequently heard of one valley, though I cannot tell where it is, where all the inhabitants are *goîtrous*, and where, when a traveller appears, the people stare at him, and stroke their chins, and when one among themselves is born without this ornament, they laugh at him, and call him "goose neck," and yet no Cretins exist among them. Districts too, are found, though not commonly, where there are numerous Cretins without *goître*.

II.

And now that we have considered the geographical distribution of these unfortunate beings, it is time to inquire into their peculiarities. What and whence are they?

Passing the little village of Riddes, on the road between Sion and Martigny, in the valley of the Rhone, one autumn day, my attention was attracted by a something, I could hardly tell what, crouching and burrowing at the foot of a wall, on which the sun was beating with a strong heat. I

went up to it, and found something like a human shape, but that was the only vestige of humanity, and that very shape was almost unrecognizable. This being was a Cretin. I examined him with care and interest, as he was the first I had seen, and he, meanwhile, basked quite unconsciously in the sun's rays. And a mournful sight it was to see this abasement of the divine human form. With his extremities drawn up, as a hedgehog would, and closely packed on his round fat belly, and one arm put over his face like a dog with flies at his ears, he lay there, and panted with a short quick breath. The expression of his face was blank, or if expression there was, I can compare it to nothing but a glimmering of melancholy, which however disappeared the moment his fine large eyes were opened. But large and fine as those eyes were, they had such a fixed stare, and such a complete want of idea, that I unconsciously compared them to wax, which they much resembled; for when he opened them they seemed to fall rather than be turned upon me, and remained in the same position all the while I looked at him. I spoke to him in German and French, but he seemed quite unconscious of my voice, but only pulled his legs together, and kept his eyes as before. I then spoke to him loudly in the *patois* of the country. At this he turned himself as if it were familiar, and, shaking his great dishevelled head, and greater goître, he gave utterance to a sort of unearthly chatter, as unmeaning as horrible, and, ending with a howl, he rose from his position. It now struck me that he was blind, and I have little doubt of it, from his mode of walking, as he seemed to grope along the wall side. And this walking, or rather crawling, for it was accomplished as much by the hands as the feet, exhibited the whole proportions of his frame. He seemed to be much below the usual size, and all the limbs were bent and distorted, while the great goître seemed to drag him down with its weight as he crawled; and perhaps the most striking part of his appearance was his abdomen, which was as disproportioned as the head of a fœtus. He seemed to have no idea of my presence; and I had thought he answered

me, but was mistaken, for in a minute or two he squatted down again by the wall, and drew himself up into a ball. He had moved with the sun to a warmer part of the wall, and that was all his senses prompted him to do. I was now satisfied, and, turning away, asked a villager if he had been long ill, "Yes, since childhood," was the reply. "How long was that ago?" "Fifteen or sixteen years." "He would die soon," I supposed. "Maybe, or not; there's plenty of them old enough," said my informant, who seemed to think the conversation highly uninteresting, and went on his way, and I on mine. At Martigny, and in the neighbourhood of the St. Bernard, as well as near Monte Rosa, and in other parts of Switzerland, and the mountainous countries of the South of Europe, and in various hospitals of these countries, I have had opportunities of seeing many others, but none struck me with such an indefinable horror as did this, the first one, of the Canton Valais. So much for one. Let us compare some other accounts. Mention of these beings is made by various authors, who have all described them in pretty similar terms.

The oldest mention of the disease that we have is in the work of Wolfgang Höfer, an Austrian physician, afterwards physician to the Court of Vienna, published in 1675, containing his observations in the Styrian mountains. Since his time many authors have paid attention to the subject, and noticed the complaint as occurring in many different countries.

The German traveller, J. G. Kohl, in his "*Hundert Tage auf Reisen*," and Weber, in his great Work on Germany, have both made allusion to the subject. The former, Kohl, describes them as they occur in Styria, and gives them the name of *Troddeln*, as they are there called, also of *Tockern*, as they are known in Carinthia. He describes them as being very abundant about Gratz, where the valleys are narrow, the climate raw, and the food neither nourishing nor salubrious. "With timid cowering mien," he says, "with dull listless eyes, with bent legs and goitred necks, (many have three or four thick swellings at their throat), these misshapen ab-

normalities drag themselves everywhere through the streets. 'Tis the saddest lopping and laming of humanity that is to be found anywhere on the earth, for the body is as deformed as the soul is debased, and the understanding as blind as the feelings perverted. These wretched creatures are, for the most part, malicious, revengeful, and cruel. They exhibit, when they eat, a most voracious and entirely brutal appetite, as indeed all their sensual propensities are manifested in a most brutal and disgusting way. Like the brutes they have generally a keen scent, but their hearing is seldom acute. Their growth displays no vigour, and they are mostly of small stature. This is a small kindness of nature to those unfortunates, for which we ought to be thankful, for if these unsightly shapes were allowed to attain a large and full developement, the sight would be altogether intolerable." So says the German philosopher.

Weber, a more practical traveller, almost reiterates these statements, and ends by saying, that these Cretins "are midway between man and beasts, as Caliban was, and the New Hollanders are!"

We may compare with these descriptions that most powerful one given by Berchtold Beaupré, in his "*Dissertation sur les Cretins*." "Who," he asks, "is this melancholy being who bears the human form in its lowest and most repulsive expression? I see a head of unusual form and size, a squat and bloated figure, with a stupid look, with blear, mallow, and heavy eyes, with thick projecting eyelids, and a flat nose. His face is of a leaden hue, his skin is dirty, flabby, covered with tetters, and his thick tongue hangs down over his moist livid lips. His mouth, always open and full of saliva, shows teeth which are going to decay. His chest is narrow, his back curved, his breath asthmatic. I see, indeed, arms and legs, but his limbs are short, misshapen, lean, stiff, without power, and without utility. The knees are thick, and inclined inwards, the feet flat. The large head drops listlessly on the breast, the belly resembles a bag, and the integuments are so loose that they cannot re-

tain the intestines in its cavity. This loathsome idiotic being hears not, speaks not, and only now and then utters a hoarse, wild, inarticulate sound. Notwithstanding his greediness, he is scarcely able to support life. One passion alone seems sometimes to rouse him from his usual insensibility—this is the sexual instinct in its rudest brutality. At first, we should be inclined to take this being for a gigantic polypus, something in imitation of a man, for it scarcely moves; it creeps with the painful heaviness of a sloth; and yet it is the monarch of the earth, but dethroned and degraded. It is a Cretin!"

M. Fodéré, in his "*Traité du Goître et du Crétinisme*," gives perhaps the most able account we possess. He writes thus—"Cretins often show in the earliest infancy what they are destined to become; they have sometimes in their first years incipient goître, a puffed swollen countenance; their hands and head are large, and out of proportion to the rest of their bodies; they evince insensibility to atmospheric impressions; an habitual state of stupor and sloth; difficulty in sucking, as if through weakness of the instinct connected with the first wants: very slow and very imperfect developement of the faculty of articulating sounds; often they are only capable of learning to pronounce vowels without consonants."

Kohl, in his Styrian travels, says that he found the first symptoms of Cretinism to be a dullness of the eye, and that experienced persons can tell by the look of a child's eye, whether it is or is not to be idiotic. As Cretins grow older they become even more awkward and clumsy in their movements, and are sometimes, at the age of ten, too lazy to swallow their food, which has to be pushed down their throats. Cretins, however, are not always born so. The disease has been known to make its appearance even at as late a period as eight years old. A case of this kind is mentioned by Mr. Kohl. The patient had been till his eighth year quite healthy, and was attending school with the boys of his own age, and had made considerable advancement in his studies. Suddenly, however, the dullness and shyness

of the eye made its appearance. Then his features assumed a rigid and stupid look; his legs bent inwards and became crooked; his gait became clumsy and slow; his memory and his desire of knowledge vanished; and his mind was blinded in all directions, till at last he became a perfect Cretin, an abnormal creature, without feeling, without thought, and yet living, and yet a man.

Resuming the account given by M. Fodéré we find that these Cretins are obstinate, with a resisting mutinous temper, which is only tolerated by maternal tenderness; they show a smallness of the head disproportioned to the rest of the body; their heads are flattened at the summit and at the temples, and the tuberosity of the occiput is less projecting than natural; their eyes are small, sometimes deeply sunk, at others prominent; their look fixed and stupid; their chests are flat; their fingers thin and long, with small articulations; the soles of their feet flattened, and sometimes bent; their feet often turned either inwards or outwards; puberty comes very slowly, with enormous size of the genitals; obscene and inordinate propensities. It is not until this period that Cretins generally walk about, their locomotion is yet very limited, and only excited by the desire of getting their food, and of warming themselves in the chimney corner, or in the rays of the sun. His litter is to the Cretin the term of his longest and most fatiguing journeys, and to it he comes tottering, with his arms hanging down and his body reeling about. In seeking his object he goes forward without shunning dangers or obstacles; he can take no other road than that with which he is familiar. When he has attained his full stature, which is from thirteen to sixteen decimetres, the Cretin's skin becomes brown, his sensibility continues obtuse, he is indifferent to cold or heat, or even to blows and wounds; he is generally deaf and dumb; the strongest and most revolting odours scarcely affect him. I have seen," continues Fodéré, "a Cretin eat with avidity raw onions and even charcoal, which proves that the organ of taste is gross or imperfect. The affec-

tions of Cretins seem to be still more dull: they have often no sort of gratitude for the good offices rendered to them; they show scarcely any sensibility at the sight of their relations; and evince neither pain nor pleasure in respect to their physical wants. Such is the physical and moral life of the Cretins during a long career; for, reduced to a sort of vegetation and automatic existence, they arrive without difficulty at an extreme old age." Regarding this latter statement there is a considerable difference of opinion, and it seems on the whole more probable that their life is short. The assertion made with regard to the longevity of Cretins, (if taken generally), is contradicted by many authorities; but still Kohl assures his readers that the vital power, although imperfect, is yet tough, for the Cretins live to a great age, and many of them drag on their unhappy existence for seventy years or more, as he says, "a misery to themselves, and an eyesore to creation." But Weber expressly contradicts this statement, and winds up some remarks on Cretins, by saying that it would be wrong to wish them an old age, and better far to kill them out of mercy, as some barbarians do. And, he adds, "*der grösste Segen des Himmels ist indessen der, dass diese traurige Geschöpfe selten alt werden.*" The greatest blessing of heaven is just this, that these unfortunate creatures seldom grow old. And such a remark would not have been made by an observer like Weber without considerable examination of the subject. I have seen a case above thirty years of age, but only one, and it would seem that they generally die on reaching that age.

Many descriptions to the same purpose, from different authors, might be added, but it is unnecessary, as they all bear a certain similarity, and only tend to show the reduced state, physical and mental, to which these beings are reduced.

I may add a few words on the description of the skull of a Cretin, which I had an opportunity of examining in Berlin. It was only at the base of the skull that any unnatural ap-

pearance is observable, the summit and sides of the cranium preserving their normal appearance, with the exception of the temples being slightly flattened. From the lower curved line of the occipital bone, instead of the bone's gradually ascending and sloping backwards, it went at once straight up, producing a flattened appearance of the back of the head, and so that the occipital protuberance was straight above the foramen magnum. From the form of the occiput on the dry bones, this foramen looked rather backwards than forwards, and at the articulation with the sphenoid, the basilar process was bent to such a degree as almost to form a right angle. The occipital protuberance was much enlarged. This peculiar change in the formation of the bones gave a striking appearance to the external aspect of the skull's base; and, on looking into the interior, I found an equally curious change in the formation. I observed that the basilar process was curved upon itself, and the posterior fossa of the skull, behind the lateral sinuses, was so small that it could scarcely contain a third of its proper mass. These lateral sinuses too were much larger and wider, and the groove for them much deeper than in the normal skull, and also, owing to the peculiarity of the shape of the basilar process, their course was longer. That the Cretin skull is larger in proportion than the average head of the same age is shown in the following Tables. In the first, the first five cases are from Dr. Guggenbühl's statement, the sixth is from a specimen in the Medical Collection of the Boston College. The first measurement is the circumference of the head above the superciliary ridges, passing through the most prominent part of the occiput; the second over the top of the head, from the root of the nose to the occipital protuberance; the third also over the top of the head, transversely, from one ear to the other.

Table I.—CRETINS.

Name.	Age.	1st Measurement.	2d.	3d.
Marie S.	2 years.	16 inches.	$13\frac{3}{4}$ inch.	$10\frac{1}{2}$ inch.
Claudine S.	2 “	18 “	$14\frac{1}{4}$ “	$12\frac{1}{4}$ “
John F.	3 “	$20\frac{1}{4}$ “	16 “	$9\frac{1}{2}$ “
Eliz. Z.	3 “	$19\frac{1}{8}$ “	$13\frac{3}{4}$ “	$12\frac{3}{4}$ “
Martin D.	5 “	$20\frac{3}{4}$ “	$14\frac{7}{8}$ “	10 “
Cretin of Valais	Aged.	$20\frac{1}{2}$ “	13 “	$11\frac{1}{2}$ “

In reference to this Table, I may mention, that the law laid down by Dr. Gall was, that, when the first and second measurements of the head are below 17 and 11 inches, there is always greater or less stupidity; that when the first measured from 11 to 13 inches, and the second 8 or 9, the condition could be little above idiocy. We can compare the above Table with the two subjoined,* the first showing the measurements of the skulls of idiots, the second that of the normal skull, from which we can observe that the skull of the Cretin is by no means so deformed as that of the true idiot, whence perhaps the greater success which has been experienced in the treatment of the former.

* From the American Journal of Science.

Table II.—IDIOTS.

Subject.	Age.	1st Meas.	2d.	3d.	Where from.
Male	25 years	15 in.	10 in.	9 inch.	Massachusetts Med. College.
Female	17 "	15 "	10 "	10 "	"
"	60 "	18 "	11 "	10 "	"
Male	Adult	18 "	10 "	$10\frac{1}{2}$ "	"
"	"	18 "	11 "	11 "	"
Female	"	18 "	$10\frac{3}{4}$ "	$10\frac{1}{2}$ "	"
"	"	$18\frac{1}{2}$ "	10 "	11 "	"
"	"	$17\frac{1}{2}$ "	$10\frac{1}{2}$ "	10 "	"
—	?	14 "	$8\frac{1}{2}$ "	$8\frac{3}{4}$ "	"
—	6 years	14 "	$8\frac{1}{4}$ "	$8\frac{1}{4}$ "	"
—	21 "	$14\frac{1}{2}$ "	9 "	9 "	"
S. Walker	6 "	—	$10\frac{1}{8}$ "	$10\frac{1}{2}$ "	Dr. Howe's Report.
G. Rowell	9 "	$14\frac{9}{10}$ "	$10\frac{1}{8}$ "	$10\frac{1}{2}$ "	"
E. S. Field	7 "	17 "	$11\frac{3}{4}$ "	$11\frac{1}{10}$ "	"
Charles	16 "	16 "	8 "	9 "	Institution at S. Boston.
Rowell girl	8 "	$15\frac{1}{2}$ "	$10\frac{1}{4}$ "	$10\frac{1}{2}$ "	"
Astec boy	7 "	12 "	$7\frac{1}{2}$ "	$7\frac{1}{2}$ "	Described by Dr. Warren.
Astec girl	5 "	12 "	$7\frac{1}{2}$ "	$7\frac{1}{2}$ "	"

Table III.—NORMAL SKULLS.

Subject.	1st Measurement.	2d.	3d.	Where from.
Average Skull	21 inches.	12½ in.	12½ in.	Boston Medical College.
Carib “	21¼ “	12 “	12 “	Boston Nat. Hist. Society.
Child of 5 years	18½ “	12 “	12¼ “	“
“ 4 “	18¼ “	11½ “	12½ “	“
“ 3 “	18 “	11¼ “	12 “	“
“ 2 “	17½ “	12 “	12¾ “	“
“ 1	17¼ “	11¼ “	12¼ “	“
“ at birth	12¾ “	8 “	8 “	“
Ourang Outang	13½ “	8 “	8½ “	Medical College.

The other post mortem appearances which have been observed and recorded by Feuchtersleben, in his “Medical Psychology,” are, frequent atrophy, and occasional hypertrophy of the brain, effusion of water, scirrhus formations, fungus and hydatids have been found in the cavity of the cranium. The cortical substance often exceeds its normal quantity,* and both it and the medullary are often softened. The falciform sinus has been found empty of blood; the cerebellum softer than the cerebrum, the convolutions of the latter, and the lamellae of the former, diminished in number. On examination with the microscope, nothing abnormal has been detected, but the blood is thinner than in the natural state.† The lungs are frequently small, flaccid and full of tubercles, with frequent adhesions to the pleuræ; the

* Mally, Diss. d. Crétinism.—1830.

† Lippich.—The reverse seems the case in Idiots.

bronchial and mesenteric glands are indurated; the heart slightly atrophied, and the chest and abdomen filled with serous exudations.

As regards the hypertrophy of the brain, Dr. Pellisier of Geneva considers a false hypertrophy as the most probable cause of the disease, as he says, this organ may undergo a sort of vesicular extension, without an actual serous effusion, which diminishes and flattens the convolutions, in other words, hypertrophy with dilatation. In this dilating stage the cranium becomes atrophied, the sutures separated, and the fontanelles widened. When it is over, the brain again subsides, and the bones become proportionally hypertrophied, thus accounting for the thickening of the skull observed in Cretins of advanced age.

Thus then we have endeavoured to give all the peculiarities which we can observe in the form of Cretins. It is now our duty to ask, What disease is Cretinism, and to what analagous? Those to which we find it nearest allied are, as regards the mind, Idiotism, and, in relation to the body, Rickets. By idiotism we understand a state in which "the mental faculties have been wanting since birth, or have not been manifested at the time when they are usually developed."* Rickets is a disease attacking the skeleton, during the early years of life. Concerning it, Stanley† says, that in some instances it commences immediately after birth. It rarely, however, appears before the fifth or sixth month, and the most frequent appearance of it is between eighteen and twenty-four months. It very seldom commences after puberty. The same words apply to Cretinism, while the description of the diseases, and the phenomena attending each, are very similar. The bones are incompletely developed and formed; they are bent, deformed, and distorted; the pelvis is small, and flattened; the long bones crooked; and the head small, from the want of growth in the bones of the face, from which cause also the cranium appears larger than usual. The features in rickets are strongly marked and displeasing, but the in-

* Prichard on Insanity.

† "On the Bones."

telligence is often very great, in which point the difference is marked. We may then consider the disease of Cretinism to be highly developed rickets, accompanied with idiotism. We may indeed look upon Cretinism as a variety, and the highest degree of idiotism, a degeneration of all the faculties of the body and mind. Its peculiarities consist in certain characteristics accompanying the general appearance of idiocy proper. These peculiarities, according to Feuchtersleben, are the following: 1. Where it is endemic, Goître. 2. A stunted growth of the body, it being coarse, dwarfish, and ugly. 3. Leucæthiopia, that is, not only as applied to the iris, as is generally understood by this term, but the defective sight in general, with paleness of the membranes and weakness of the nerves. 4. A deaf and dumb state, not acquired through disease, but congenital, and arising from a retardation in early youth. All other phenomena are those of idiotism in general.

Maffei, in his "*Untersuchung über den Kretinismus*," looked upon the want of hearing and speaking as the two most marked signs of the malady.

Dr. Guggenbühl divides Cretinism into several classes or stages of the disease. He defines it to be a disease of the cerebro-spinal system, causing a want of the developement of the body and perceptive faculties, and considers that if this disease of body be removed, the maladies of the mind will be more easily overcome than in those cases in which the body is in full vigour and the mind idiotic. To prove this, he cites in his work two cases, treated in the Abendberg Institution, the subjects of which were brothers, the one a Cretin, the other an Idiot.

A. B. on admission nine years old, had a pointed microcephalic head, lean atrophied body, long slender arms, universal relaxation of the muscles, unsteady slinking walk, and knees bent forward like monkeys! His face plainly showed the state of his mind; the tongue was thick and knotty, swollen at the point; the teeth incrustated, badly formed, irregular: the lips puffy, the lower one hanging down; constant running of saliva from the mouth, and a bad breath. He chewed hard substances with difficulty; the

corner of the right eye was dimmed, in consequence of scrofulous ophthalmia; the forehead retreating, the occiput flattened; the chin projecting; the colour of the face pale, lymphatic; hearing and the senses generally impaired. The condition of the mind was foretold by that of the body; his ideas of everything were indistinct and confused; his speech an incomprehensible "*Lallen*" of broken inarticulate sounds; he was, besides, a very envious and unbearable being; was strongly prone to striking and scratching, and had a general predominance of the "*penchans inférieur*."

His developement was, however, highly favourable; with the improvement of his bodily health his mental life went rapidly forwards; the boy learned to read and write; he became a tolerable adept in geography and natural history; and, after three years, wrote very pretty letters to his parents, and was able to make himself understood in conversation.

His brother, E. B., on admission seven years old, was born with a fully developed body. When four weeks old, he was seized with convulsions and congestions of the head, the former being regularly repeated every three weeks. Meanwhile his body flourished, and always retained the normal growth for his age, but the mental developement was deficient, in so far that he never learned to speak a word. The boy constantly amused himself by playing with strings, and was from time to time so excited, that he tore and struck all that came in his way. His body was thoroughly strong, his eyes had a lively glance, and his face was so beautiful and regularly formed, that many visitors imagined him to be a healthy boy playing with the patients. Also the formation of the head showed no deformity, the circumference was 20 inches, the second measurement was $14\frac{1}{2}$ inches, and the third $12\frac{1}{2}$. The convulsions bettered under the use of cop-per, and the Preissnitz sweating cure, but the mental state remained almost as it was; with incalculable difficulty he was brought to be able to speak a few words, to be obedient and cleanly, and to give up eating coals, stones, and dirt.

The classes into which Dr. Guggenbühl divides Cretins are four. 1. Those in which the bodies are much emaciated, and

the limbs paralysed. These he terms the *Atrophied Cretins*, and he believes that in them the spinal cord is chiefly affected. Of these he gives an example* in the case of a girl who entered his establishment at the age of six months, having, since the fourth month of her existence, had a wasting of the whole muscular system, a completely disordered digestive apparatus, and a very irregular structure of the head, &c. Pursuing his line of treatment with her, in the space of twelve months she underwent a complete metamorphosis, and eighteen months after, she left the hospital, and had gained completely the power of speech.

2. Those affected to a great degree with Mollities Ossium, independent of the damage to the muscular and nervous system, and, in consequence, with bent limbs, the *Rickety Cretins*. An example of this, of his recorded cases, is that of a girl, whose father had a tendency to melancholia, born in a country predisposed to Cretinism. In her first year her developement was arrested by scrofula and rickets. On entering the Abendberg, at the age of eighteen months, she was slightly paralytic, with a narrow forehead, deprived of all appearance of intelligence, not even noticing external objects. In about eight months she commenced to think and to walk, her intellectual and moral faculties developed themselves as the head increased in volume. After a residence of four years she left the establishment in excellent health.

3. Those with Chronic Hydrocephalus, with wasting of the nervous system, absence of moral and intellectual faculties, various symptoms of paralysis, and almost approaching this fourth grade:—the *Hydrocephalic Cretins*. An example of these is given in the case of a girl born of delicate parents, with an aunt of a rachitic tendency. In early infancy the girl, whose head was previously deformed, was attacked with cramps, coughs, hooping coughs, and chokings. Later she very slowly recovered from a violent attack of fever, and had increasing diminution of the power of speaking and walking.

* See his first Report.

On entering the establishment, when four years old, the disproportion of the head to the face and the rest of the body was very remarkable; the sensory functions were in general active, but a general feebleness, more especially of the muscles, was very marked. She could not speak, walk, not even eat, while she understood only several words and short phrases. The elements of judgment, feeling, and will existed, but they were almost extinguished, and her character was capricious and melancholy. This patient was also cured in the establishment.

4. Those in whom the worst symptoms are found, and which prove most intractable,—*Congenital Cretins*. In some of them all the above conditions exist together.

It seems probable, that in many the idiocy is the consequence of the rickety state of the bones of the skull. A careful examination of cases of Cretinism, made in Canton Valais, shows, according to Dr. Guggenbühl's account (1st Report), that at least the half of them commence with rachitic softening of the bones.

M. Virey, in the "*Dictionnaire des Sciences Médicales*," mentions that, in the work of Dr. Ackermann, published in the last century, the entire cause of Cretinism is attributed to a cachetic state of the body, which, inducing scrofulous necks of the cranial bones, and causing them to press on the nerves at their origin, produces the phenomena of idiocy. Making the appearance of the skull and the above facts into consideration, I am fully inclined to agree with this opinion, and consider it as accounting for the secondary phenomena of Cretinism, viz. Idiocy; but we have yet to discover why this rickety state should be induced, and why common in one place, and not in another. Knolz, in the "*Medizinische Jahrbuch des Oesterreichs*," considers the essence of the disease to consist in predominant activity of the sympathetic, and imperfect developement of the cerebral system, from which he explains not only the phenomena occurring during life, but also the post mortem appearance of the remarkably developed sympathetic nerve.

But, before inquiring into the cause of the disease, let us

review one or two interesting facts connected with the life of the beings afflicted with it. Having considered what Cretinism is, we have now to examine how Cretins live, and how they enjoy existence. The traveller, in his rapid passage through Switzerland, in the grand tour of the Alps, passes many of these melancholy and interesting beings unnoticed in his route, or if he does notice them, poor beings begging by the roadside (the full extent, in general, of the education of even the well informed Cretin), he turns from them with a shrug of horror, and a "poor idiot!" It is owing to this, perhaps, and the constant beaten track of the British traveller abroad, that we possess no particular account of them in our literature, and it is merely here and there that we find a notice of a few lines made of them. But there is still great room for practical examination and scientific investigation of these beings, who in many parts of the Swiss Alps, slightly off the beaten track, are to be found in hundreds.

As in Scotland we look upon idiots with a kind of hallowed superstition, so in Styria, in Switzerland, and in the other countries in which they occur, the Cretins are looked upon as a species of hallowed individuals, sacred beings, as scapegoats on whom an affliction is cast for the benefit of the community; and, consequently, any injury offered to them is sure to be highly resented. This arises from a natural feeling, which is shown more or less by all nations, as we see, for example, in our own country, and in the high respect paid by the Turks to idiots. The cause of it is the total helplessness of the beings, who need all the care which can be bestowed on them, and because the uneducated community seemed to feel that these individuals are suffering such dreadful, mysterious, and apparently undeserved afflictions, not for themselves so much as for the sins of the family to which they belong. And it is in relation to this that the philosophizing German Kohl remarks, "that in almost all nations a certain saintly halo is piously allowed to encircle the heads of those who are unsound in mind; for what men cannot explain by any second cause, they invariably refer to the first Great Cause; besides that, in the

common and normal condition of the mind, there is often less to remind us of our actual connection with a higher spiritual world, than in the extraordinary and abnormal." The priests, too, in these countries in which Cretins are found, contribute largely, and doubtless wisely, to the maintenance of this superstition, by which means those unfortunates are continually well attended to, and never treated with the scorn and contempt which their forlorn situation might otherwise expose them to; and even the careless and the wanton are deterred from insulting or injuring them by the fear of incurring the displeasure of their holy fathers. This I have several times remarked, and frequently heard spoken of by travellers.

In return for this kind treatment, the Cretin gives little or nothing to his benefactors. He possesses no feelings of generosity or love, is in many cases unconscious even of the solicitude of his parents, and often even of that excess of love which a mother exhibits to an unfortunate child; his thoughts, if any he possesses, are all concentrated in self; and, beyond eating, lying in the sun, and sleeping, he seems to have no desire nor wish, with perhaps one important exception, the keenness of the sensual appetite. That they marry, and are capable of reproduction, is a well known fact, and the offspring they produce are invariably creatures like themselves. Although, for the first year of their life, they present nothing unsightly in their appearance, yet, before they reach the close of that year, they swell, and get of a dirty colour; then the intellects show that they are dulled, they never learn to speak or perform any other mental act, and, in the fourth or fifth year, they are beings like the parent stock, with enormous goîtres, rickety limbs, and idiotic in the extreme. It is, however, not only the children of Cretins that become so. In those valleys all seem subject to the disease, and none exempt from it. But some would seem to be freer than others, for we find that strong, healthy, soundly organized parents, have seldom Cretins in their families, and also that those with and subject to Goître, seem more susceptible to the complaint

than those who have none. Mr. Pritchard mentions that the women of the Valais are more apt to have Cretin children when married to Savoyards, than when married to Frenchmen. The cause of this is, that while nearly all the women of the Valais are unhealthy, yet the Frenchmen are diligent, hardy mountaineers, steady and active, while the men of Savoy are lazy, drunken and debauched. Parents afflicted with stammering, a very common disorder in the Valais, often have Cretin offspring, and when one is born in a family, other individuals of the same family are liable to be afflicted. These facts prove it to be to some extent a congenital disease, depending on some cause acting on the people of the countries.

III.

We have now before us the third head of our dissertation. What and whence is the cause of this disease? And this is the question on which so much has been argued and stated, and so little is certain.

The cause or causes have long been supposed to be the same as those giving origin to Goître, but, on examining the subject, we find that they are distinct, although we find that where Goître is endemic, the Cretin is generally more or less affected with it.

The earliest opinion was, that the origin of the two diseases was the habitual use of snow-water in the valleys where they exist. But this opinion has been long since refuted by M. de Saussure, who was the first to observe that Cretinism was peculiar to only certain parts of the mountains, in certain valleys, and on the lower parts of the ranges. Now, in the higher parts of the mountains, it is unlikely that the inhabitants drink less snow-water than in the warmer valleys, and yet we find that those mountaineers are a strong and healthy race, stronger even than those of the lowest valleys, and it is only in the middle elevation that the abundance of disease is noticeable. Again we find that the Kurrawurrees in Hin-

Mostan drink nothing but snow-water, and yet we do not find that they are afflicted with this disease, although their provisions and mode of life are very similar to those of other mountainous countries.

But notwithstanding, as regards Goître, this original opinion may probably be the correct one, although other causes may originate the disease, and, as regards Cretinism, it may be looked on as *one* of the causes. Not indeed that snow-water in particular has anything to do with it, but water, owing to its holding some peculiar substance in solution, or wanting some one. Mr. Kohl mentions, that in Styria, the popular explanation of Goître and Cretinism tends to throw the blame upon the water, for there the peasantry will shun drinking from many springs, and will travel far to find others, as they say that out of those they have condemned arise stupidity, Goîtres and Cretinism. Thus we find near Fronzeiten, in Styria, he says, a well of pure delicious water, but whoever drinks of it become goïtrous, or if young, a Cretin. Other springs he mentions as being supposed to cure the evils induced by the first. For these "popular superstitions," as he calls them, there is probably good ground. The recent researches of Drs. Morel and Menestrel,* in the department of Vosges, in France, have brought them to the opinion that the diseases are induced by a want of Iodine and Bromine in the water, and a superabundance of lime and magnesia. And it has long been a well known fact, that those mineral springs, both in S. America and in Europe, which have acquired celebrity as capable of curing Goître, are found to contain Iodine, which seems to be a specific remedy for the disease, as shown by the numbers of cures accomplished by its use in India and elsewhere.

Now, although Cretinism and Goître are distinct diseases, yet as it is widely supposed that their cause is the same, and as most certainly one cause in some degree is the same, we

* See Annales Medico-Psychologiques.

cannot consider that cause of Cretinism, without at the same time glancing over the causes, &c. of Goître. The opinion then, which has lately gained so much ground is, that water is the cause of Goître, being impregnated by certain mineral substances, derived from the geological structures through which it passes; and that this is assisted by poor diet, dirt, bad living, confined air, &c. The opinions which connected the disease with the use of *snow*, probably arose from the fact of its occurrence in alpine countries. But in some places we find that the people drink *pump* water, and there this pump water is blamed as the cause of the disease. This fact then unites two causes into one, which is, *Water*. But in all valleys and all countries people drink water, and yet it is only in some valleys and countries that Goître and Cretinism are found. If the cause then is the water, it must be from some peculiar substance in the water, held by it in solution. This source is probably sulphate or carbonate of lime, or some other salts of lime, which are those occurring in what is generally known as hard water. This opinion is strongly supported by many facts. For instance, we find that in the neighbourhood of Nottingham, Bronchocele is very common, and there it is vulgarly imputed to the water, which is a hard water. Dr. Coindet of Geneva, mentions as a fact, that the use of the hard water in that town is sure to induce Goître; and Dr. Bailley says that he knows springs and waters in Switzerland, the drinking of which is sure to bring on the disease, while there are springs of a different nature, used by people who never have Goître or Cretinism. Besides, at Edmonton, in the Polar Seas, where both Goître and Cretinism occur, the former very abundantly, as mentioned by Dr. Richardson, the fellow traveller of Franklin, it seems that the diseases only attack those who drink of Saskatchewan river, the water of which is hard. Also in the Valais and in Cluse in Savoy, the waters drunk by the populace are almost all hard, and it is there that we find the greatest amount of these complaints. Also in the neighbourhood of Kelso, in Roxburghshire, more particularly in the villages, of

which Yetholm, the Gipsy capital, may be cited as an example, many cases of Goître are to be met with. In this country the water drunk by the people is hard.

Now, if we examine the geological structure of those countries, we find that they all abundantly contain lime. A great bed of limestone and magnesian limestone occupies a great portion of the Tyrol, the whole of the Grisons, and extends over the Cantons of Schwytz, Uri, and Unterwalden, occupying the greater part of the shores of the Lake of Luzerne, then passing south-west, including Brienz, with its Lake, and that of Thun, the mountains Faulhorn, Scheideck and Stockhorn, the passes of Gemmi and Zweizimmen, the towns of Locche, Sierre and Sion, Mount Jaman, and Vevay, where it reaches the Lake of Geneva, along which it courses, stretching nearly as far south as Chamonix, and including Cluse and Bonneville. Another great belt of limestone may be said to ascend the Rhone from Brieg as far as the Furca, in one direction, and Airolo and the Pass of Splügen in another. Now, it is a great fact, in support of this lime in water theory, that this is precisely that district in Switzerland and its adjoining territories in which Goîtres and Cretins most abound; and it is another impressive fact, that in the two beds of granite and gneiss which interrupt the great limestone field, namely, the Bernese Oberland and the Mt. St. Gothard, Goîtres are rare, and Cretins do probably not exist, certainly not as indigenous. But still we find that such places as Martigny, Andermatt and Geneva, the first two of which stand on granite, and none on limestone, are also liable to Goître, and in the case of Martigny, to a great amount. But the difficulty here is of easy solution. The inhabitants of Martigny drink the hard or lime impregnated water of the Rhone, which has all its course, with the exception of in this corner, followed the lime district; those of Andermatt are supplied equally as much by the Reuss, rushing down from the Furca, as from the stream running from the Lake of Lucandro, near the summit of the Gothard; and the people of Geneva are well supplied with lime in the water of their lake. The great

limestone rocks at Cluse in Savoy form one of the most striking features in the landscape; and between Balme and Maglan, in the same neighbourhood, where there are many Cretins, there are also many phenomena respecting the limestone rocks which serve to impress their existence on the memory, such as stalactitic caverns, rocks with wonderful echoes, and the celebrated Cascade d'Arpenas, mentioned so particularly by Goethe in his Swiss Letters, in connection with the layers of limestone.

Dr. Richardson too, in his account of Edmonton, remarks that the soil is calcareous, and contains many fragments of magnesian limestone; and, with respect to England, Dr. Inglis* says, that magnesian limestone is always present with disease. "Take," he says, "that ridge of magnesian limestone running from north to south through the centre of Yorkshire, and margining the shires of Derby and Nottingham. All along that line we have Goître, whereas on diverging to either side, the disease is found to diminish. The towns situated on this ridge are Nottingham, Chesterfield, Rotherham, Ackworth, Pontefract, Abberford, Wetherby, Knaresborough, Boroughbridge, and Ripon. After this the magnesian limestone dips, then reappears in the county of Durham; it continues its course almost due north from Darlington to South Shields, where at Tynemouth it meets the sea. In many of these towns I know Goître prevails; in others I should suppose it did, except where we approach within the limits of the sea, where the morbid action would be counteracted, as we find from Dr. Richardson's statement that the disease itself is removed by a sea voyage."—Doubtless from the presence of Iodine in the atmosphere in its neighbourhood.

In the vicinity of Lyne, in Peeblesshire, in the midst of the limestone rocks, cases of Goître are not unfrequent, and the same may be remarked in other parts of the country.

Dr. Mottard mentions the case of a so-called Goître well

* See his Treatise on English Bronchocele, 1838.

near St. Julien in Maurienne, the water of which encrusted the trees in the vicinity with lime, and the use of which produced Goître in a couple of months; and he mentions five young men who had voluntarily drunk its water, and produced Goître, in order to be free from military service.

These facts then prove to us that water is in reality a very principal source, if not the only one, of endemic Goître, and also that it is probable that salts of lime are the deleterious substances contained in it; and these remarks receive a remarkable confirmation from the researches of Mr. M'Clelland in India,* from which we can glean many interesting facts confirmatory of the above theory. He pursued the strictest and most accurate system of inquiry through a very large extent of country, and came himself to the conclusion that Goître was caused by the geological structure rather than by any other cause, for he found that while there was a perfect agreement in the external aspect, altitude, and climatology of certain places, yet their geological relations were different, and this distinction he traced to the very villages in which the disease (Bronchocele) was found with perfect success, so that he could almost *a priori* predict, from the examination of the rocks of a district, whether the inhabitants were goïtrous or not. Then, on further inquiry, he found that every village in a neighbourhood was not equally affected, some were more, others less, some to the full half of their population, others free; and this not owing to an epidemic or transitory cause, but it was so then, had always been, and would always continue to be. He then, pursuing his inquiries, found that in many parts of the districts he examined, Portan, Agre, Bentally, &c., where clayslate, hornblende slate, and silicious sandstone occurred, Goître was very rare, or did not exist at all, its occurrence in a population of 7700, on the Ramesa river, being only twenty-five times, or once in 308. Then again,

* Some Inquiries in the Province of Kemaon, relative to Geology, including an Inquiry into the Causes of Goître, 1835.

along the district of Shore, and the neighbouring villages, the prevalence of Goître followed in a marked manner the distribution of the strata, the affected districts running along the limestone rocks parallel to the central ridges composed of clay slate, and which are nearly altogether exempt from the disease, except where the rivers supplying their springs descend from limestone rocks. This M'Clelland showed, striking as it is when looking over the country in a large scale, is equally so when smaller portions of country are separately examined, and even different parts of one village, or when different castes of the people (Domes and Brahmins) used different springs for their supply of water. The waters of this district, and of many others where Goître abundantly prevails, nearly agree in character. They are in great plenty, and of a temperature corresponding to the mean temperature of the place. The water often rushes from the rocks with ebullition, crystalline and sparkling, and deposits loads of calc tuff. In the employment of chemical tests, no sulphuric acid was detected, but carbonic acid and lime, with a little iron and earthy alkaline muriates. These districts are remarkable too for the number of sick in them, and the prevalency of fevers and bowel complaints is marked. From the accurate tables which Mr. M'Clelland gives us, we find that the presence of Goître is statistically proved to be common, and it affects a large proportion of the inhabitants where transition limestone, limestone, and magnesian limestone occur, while, on the other hand, where the strata are composed of granite, gneiss, sandstone, clayslate, and the like, Goîtres are rare or unknown. Further, that, when they were found in the latter districts, it was generally ascertained that the persons affected with them had contracted the disease in some other locality; and that although a village be built on limestone rocks, it may be free from the complaint, provided its waters be derived from other rocks; and when built on granite or claystone may be goïtrous if supplied with water by limestone rocks. One of the cases mentioned by Mr. M'Clelland is peculiarly interesting. The village is Deota

at the foot of the Durge mountains. The inhabitants of this village are all strong, well fed, and have but little toil, and yet a remarkable difference is seen in the three castes. Of the first, the Brahmins, there are about twenty persons, all free from Goître; of the second, the Rajpoots, forty in number, two-thirds are affected to a greater or less degree, and of the third caste, the Domes, there are forty-six, all of whom are affected with Goître. This case, perhaps, proves the statement better than any, for we find that the spring supplying the village boils up amidst the rocks in the quantity of forty gallons a minute, and agglutinates the sand and gravel by which it is surrounded, by the deposition of calcareous tuff. Now the former inhabitants of the village, aware, probably, of the injurious effects of this water, brought other water by an aqueduct from a distance (a clayslate) source, by which the Brahmins were supplied, and the Rajpoots, who are allowed to intermarry with them. But the aqueduct having gone out of repair, and there not having been enough of water for both, except during the rainy season, the Rajpoots had to drink from the other spring, which the Domes were always compelled to use. I may mention now the instance of another village, also attending strongly to prove the theory. The valley of Bari-biri is about 4000 feet above the level of the sea. Its eastern extremity is composed of clayslate, and here, in five villages with 152 inhabitants, not a Goître was found. The western end is partly of limestone, and here, of 192 inhabitants, in six villages, 70 have Goître; but one of the villages, Ducygong, supplied with water from clayslate, has not a single case, while Ager, not half a mile distant, where the inhabitants use water running from an old copper mine in limestone, containing no sulphate, but abundance of carbonates of lime and soda, in a population of 50, no fewer than 40 had Goître, of whom 20 were Cretins. Two other villages, Oliel and Gooraght, may be mentioned here. In the former, situated in a pleasing amphitheatre of limestone rocks, of 25 inhabitants, 13 have Goître, of whom 10 are Cretins. And of these a whole family is deaf and dumb;

they seem also deficient in sight, and insensible to the passions of joy and fear. In the latter, partly built upon clay-slate, and partly on a calcareous conglomerate, containing blocks of serpentine, of 25 inhabitants, 10 have Goître, and a father and two sons are Cretins, the two sons being deaf and dumb. He does not, however, allude to other causes which may have given rise to the Cretins. The result of Mr. M'Clelland's researches may be thus summed up.

In the strata of granite and gneiss, of the whole population one in 500 had Goître, and no Cretins were found. On mica and hornblende there were neither Goîtres nor Cretins. On clayslate one in 230 had Goître, no Cretins. In the transition series one in 240 had Goître, no Cretins. On sandstone, no Goître, and no Cretinism. On lime one in three had Goître, and one in twelve was a Cretin.

I might go on enumerating similar cases; but it is unnecessary, as the facts already stated sufficiently tend to show that the great cause of endemic Goître is lime contained in the water, depending on the geological structure of the soil, and that Cretinism is perhaps in some degree influenced by the same cause, though by no means entirely so. But although this, in the majority of cases, suffices to show the cause of Goître, it is yet not enough for solving the question of its cause in all cases. For instance, in Edinburgh, where soft water is most universally employed by the inhabitants, sporadic cases are met with, as well as in the other parts of the country, where the conditions required by the lime theory are not to be met with. Such cases are to be regarded as anomalous, and dependant on as yet unknown causes.

There is again another kind of Bronchocele, which attends cases of Anæmia, arising from functional derangement of the heart, in which, among other symptoms, there is a peculiar jerking pulse, a remarkable hollowness of the iris, giving to the eye the appearance called white-eyed, and the thyroid gland is much enlarged. The cause of this disease, which Dr. Begbie has described in the Edinburgh Monthly Medical Journal six or seven years ago, and of which Dr.

Christison mentions he had three examples in his practice, is very obscure; but we have here an instance of Goître with which geological formation has no connection. This class of Goître I have named Cardigenous Bronchocele.

There are yet other instances to which the lime theory is inapplicable, as showing the cause of Bronchocele. Cases now and then, but very rarely, occur, in which Goître is congenital. I can find no author allude to this in any of the works I have consulted, with one exception. In those countries where Goître is most abundant, we do not find that the children are born with the affection, but that it develops itself as they grow older. I do not remember having in Switzerland, or elsewhere, noticed a child in arms with the disease, although frequently I have observed large Goîtres in children of three or four years old, for example, near Sierre and Sion, in the Canton Valais. The exception to which I above alluded is a case mentioned by M. Ferrus in his article "*Goître*," in the "*Dictionnaire de Médecin.*" He there mentions that M. Guyot told him that M. Godelle, Physician to the Hospital of Soissons, preserved the body of an infant, which had only survived a few hours, having come into the world with a Goître, his mother being affected with the same malady. Here we have a real case of congenital Goître, with probable transmission from the mother. Where she contracted the disease we are not informed, but she may have got it in a district where it was endemic, which, however, could not have been the case in the following instance, which occurred within the present year. In the month of January last, Professor Simpson brought into the world a child with a large swelling, occupying the whole bulk of the thyroid gland, having the true appearance and characters of Goître. The child lived for a short time, and then died, choked by the pressure of the tumour on the trachea. It was kept alive for some time by the introduction of a flexible catheter into its throat. In this case the disease could not have been derived from the parents, for neither were they affected with it themselves, nor were they recently exposed to any of what we have already considered as the

predisposing causes of Goître, as they had been travelling for some time in various places. Dr. Keiller of this city, also mentioned a case at a recent scientific meeting, which had occurred to him in his private practice, in which the child was not only born with a large Goître, but is alive at present, being now nine or ten months old. Neither in this case was the lime theory applicable.*

There is still another kind of Goître, of which, however, I have found notice only in French works, which occurs among the weavers of France, and which is imputed to their mode of work, and the emanations arising from steeped flax.

I would then consider that there are five distinct classes of Bronchocele to be met with, arising probably from different causes, but presenting the same phenomena. Of these the cause of the first is tolerably well established, those of second and third doubtful; and those of the two last unknown. These classes are:—

1. *Endemic Bronchocele*, caused by the waters being strongly impregnated with lime.
2. *Weavers' Bronchocele*, caused by the mode of work and emanations of steeped flax.
3. *Cardigenous Bronchocele*, arising from a functional derangement of the heart.
4. *Congenital Bronchocele*, where an infant is born with the disease,—cause unknown.
5. *Sporadic Bronchocele*, when an individual not residing in, or coming from a locality where the disease is endemic, is attacked by it, and where the causes of the second and third classes are inapplicable,—cause also unknown.

It is not my intention to discuss here particularly the method of cure employed in Bronchocele; but as it is so very

* The cases of Drs. Simpson and Keiller have since been reported in the proceedings of the Medico-Chirurgical Society. See Edinburgh Monthly Medical Journal for April 1855

frequent a complication of Cretinism, we must consider the cure of the former when attempting that of the latter.

We find then that there are three stages in which Goitre is met with.

1st, Where there is simple congestion ;

2d, Where there is a gelatinous, jelly like deposit ; and,

3d, Where there is a deposit of cretaceous matter, hard and gritty to the feel.

These stages must be considered in the treatment.

In sporadic cases we may commence our treatment at once, but in those countries or localities where the disease is endemic, we must first remove our patient from the infected spot, and then commence treatment. The remedy which has acquired the greatest reputation, and indeed that of a specific for Goitre, is iodine, which certainly possesses an extraordinary influence on the disease. We are indebted to Dr. Coindet of Geneva for the first introduction of the remedy, which is, besides, the natural one, occurring in great abundance in those wells which are resorted to by patients for the purpose of curing the disease. It is remarkable too, that iodine does not act so well upon small Goîtres as upon those which have attained considerable size ; besides, it must be borne in mind that it is in the congested and gelatinous stages that it is of advantage, as, in the third, it seems of little value. It is best used by exhibiting small doses of the *Liquor iodinei compositus* of the Edinburgh Pharmacopœia. It seems to produce no effect until the state of iodism is produced, when generally the Bronchocele begins to diminish, and gradually disappears. Out of 120 cases, Dr Manson cured 87, and greatly relieved ten more by this means. Dr. Coindet had equally good fortune, and in the Himalayah Mountains Mr. Bramley, under unfavourable circumstances, cured 57 out of 116, and brought 34 more into a fair way of recovery. Iodine is also used in the form of an ointment, the *Unguentum iodinei compositum*, to be rubbed on the tumour night and morning ; and some practitioners have found that leeching is of great service. In former times the ashes of burnt sponges, powdered, were given as a cure ;

this was before the introduction of the use of iodine by Dr. Coindet, but was merely another mode of administering the same drug. Hydrochlorate of soda, phosphate of lime, chloride of barium, mercurial plasters, local and general excitement, produced by means of rubbing with dry towels, sea water, digitalis, hyoscyamus, belladonna, camphor, volatile oils, and the use of baths of sulphureous and chalybeate waters, have been recommended and employed.

Such are the chief methods of medical treatment. Various surgical means are also recommended and employed. Among these we have extirpation of the entire gland; the introduction of a seton into its substance, thereby exciting suppuration, by which the gland is broken down and destroyed; and, thirdly, the tying of the arteries by which it is supplied. These operations are not, however, advisable. Their general results may be thus stated. All of them have at times succeeded; all are dangerous to life, and have proved fatal: and the second and third have failed to remove the disease, although the patient escaped with life. Now, we are justified rather in letting the tumour alone, than in performing any of the above operations, except when the tumour itself threatens life, by pressure on the trachea, œsophagus, or great vessels of the neck. Puncturing the cysts of the gland has also been tried with advantage.

We have now considered the chief phenomena regarding Bronchocele, so we return to what is more immediately our subject,—the causes of Cretinism. We have considered pretty fully the first cause, and found that it is in some degree dependant on the geological nature of the soil. But such an explanation, although sufficient perhaps for the cause of endemic Goitre, is by no means enough to account for the prevalence of Cretinism in many districts. We have, for instance, countries where Cretinism and Idiocy prevail to a high degree, but where there is no lime formation. There must then be other causes for its appearance.

Some have stated Goitre to be the cause of the disease, but this cannot be the case, not only because we find the disease to be unknown where almost every inhabitant is

goïtrous, but also because there are Cretins occasionally found without any concomitant Bronchocele. Indeed Mr. (Curling has recorded, in the *Medico Chirurgical Transactions*, two instances of the entire absence of the Thyroid gland in idiots, of which Cretins are only an exaggerated form. And M. Cerise went so far as to remark, that the worst forms of Cretins never had Goître at all; and he calculated the intensity of the Cretinism in inverse ratio to the size of the Goître.

Others have supposed Cretinism to be caused by extreme indigence and poverty. This, however, cannot be considered to hold good, as we find indigence and poverty existing to an extreme degree, even in the heart of our largest cities, without producing any such effects. It is interesting to observe, in relation to this, that the first writer on Cretinism, Höfer, formerly alluded to, also imputed the disease to the poverty and indolence of the inhabitants, and the gross diet on which they were forced to subsist.

Others again have imputed the disease to humid exhalations and impure atmosphere in those countries where it abounds. This idea was originally promulgated by M. de Saussure in his "*Voyages en Alpes*," published in 1786. He observed that no Cretins were found in the higher villages, in those situated five or six hundred toises above the level of the Mediterranean. This was confirmed by Dr. Ferrus, who travelled a long time in the high Alps, without encountering a single Cretin. In the valleys, it was found that the families residing in the higher elevations enjoyed the most perfect health; that it was only on descending that one found Cretins; that on descending still lower they multiplied, until, on reaching the plains, they again disappeared. Now, all those inhabitants, those of the mountains, the valleys, and the plains, drank of the same water, that of melted glaciers, without any Cretinism being found among the first and last. From this, M. de Saussure concluded, that the water had nothing to do with the production of the disease. He also did not think that fogs, bad nourishment, drunkenness, and debauchery, could be numbered as causes

of Cretinism, because the effects of these influences did not produce the disease in the plains, where they were equally as much to be met with as in the valleys. He considered that Cretinism should be attributed to heated, stagnant, suffocating, and corrupted air, which those resident in the valleys were compelled to inspire; and he further observed, that it was in the villages most exposed to the rays of the midday sun that one most encountered Cretins. He besides observed, that those children which do not become Cretins before eight or ten years of age, are for the most part exempt from it afterwards; that the children of those who fix their residence in an infected locality, become as subject to it as those of the indigenous inhabitants; and that, in those villages most infected, the whole of the inhabitants have generally "*un mauvais teint*," which is exhibited in the whole appearance of their bodies. Dr. Lachaise remarked of the inhabitants of similar districts, that they have a strong disposition to chronic ophthalmia; that they are generally red and blear eyed. I have also observed this in many parts of the country. De Saussure, then, imputed the Cretinism of the Alps to the warm and stagnant air arising from the rivers. Dr. Morel, chief physician to the Hospital of Mareville, considers Cretinism to be caused by the reception of a deleterious miasma into the constitution, either from the state of the atmosphere, or from some substance taken into the economy, perhaps magnesian limestone, although, he adds, it cannot be proved to be peculiar to a limestone district. He considers also that the absence of iodine may have some effect, as in his analyses of the waters of various Goîtrous and Cretinous countries, he found carbonate of lime, chloride of lime, potash, nitrate of ammonia, sulphate of lime, silica, magnesia, and other matters, but never iodine.

But I believe that no one cause is sufficient to account for the disease, that it arises from a multitude of evil causes, and, on this account, I am inclined to agree with the supposition of M. de Rambuteau, which he promulgated in a Memoir addressed to the Minister of the Interior in 1813, during the

time that he was Prefect of the Department of the Simplon.* He called attention to the fact, that the Rhone runs between two chains of glaciers and lofty mountains, joined by various minor valleys, all of which contain boisterous streams, which empty themselves into the Rhone, which slowly and sluggishly runs down the broad valley; that sometimes these streams overrun their banks and overwhelm the plains, leaving, as they retire, matters which they have brought down, which distribute a pestilential air all around, perceptible even to travellers passing through the country; that in narrow valleys, exposed to these exhalations, the villages abounding in Cretins are situated, exposed besides, for four months of the year, to the rays of a burning sun, reflected and concentrated by the heated rocks. To these causes, he adds the use of the waters, descending from the mountains, and thickly charged with particles of lime during their course; the indolence and laziness of the inhabitants; the want of education, physical and moral; the insalubrity of the houses; the bad nourishment, drunkenness, and debauchery. He does not think that the waters of the glaciers can in themselves possess bad influences, because the inhabitants higher up drink of them without bad effects. He further presumed, that an analysis of the air in these districts would show that it is deprived of a large amount of its oxygen, and charged with an immense amount of carbonic acid and other deleterious gases. He concludes that it is not an hereditary disease, for strangers coming to this country from a perfectly healthy one have Cretin children, and where a Cretin is once born in a family, those who follow are generally Cretins too. Besides, when Cretins intermarry with healthy people, they are not much more liable than others to have Cretin offspring, although, as formerly mentioned, those of a bad constitution are more liable to multiply Cretins than those of healthy ones.

M. Fodéré, in his "*Traité du Crétinisme*," also rejects the idea of the influence of water, and holds the cause to be

* Now the Canton Valais.

rather the humid, warm, and concentrated air which is breathed in these mountain valleys. We must then consider this as an important cause; and, as we shall afterwards find, in the consideration of the last branch of our subject, seeing that irrigation and the formation of new roads, and modes of easy transit from place to place, and the like, have done much to lessen the number of those unfortunate beings in the Canton Valais, we must, I think, be compelled to look upon humid exhalations, and bad food, as equally important causes of the malady, as limestone or any such formations.

I have now to mention the probability of the disease arising from the confinement of the air in the valleys, placing the exhalations out of consideration. This has also a relation to the rock formations, and may assist us in arriving at the true cause of the disease, but we can only look on it as one cause, and view it as acting in co-operation with others.

Every geologist has observed, that certain rocks give rise to certain formations of valleys, and that, in the various valleys, we find that different meteorological and other influences predominate. From this fact then, we are at liberty to conjecture that Cretinism arises in some valleys from the peculiar formation of the hills by which they are surrounded, from the manner in which the air circulates through them, producing in some cases, currents which remove the noxious vapours arising from the streams, which vapours exert a deleterious influence on the inhabitants of these valleys; while in others, from the want of those currents, those influences remain. This doctrine would be referable not to one country alone, but to all mountainous countries, for in all, more or less, do we find that disease and idiocy abound. In the Highlands of Scotland and Wales, and in the mountainous parts of the south of Scotland, in such inclosed valleys, we almost invariably find idiots. In most of our valleys, the other conditions mentioned as causing Cretinism do not exist, such as lime formations, snow-water, indolence and excessive heat; but we have the shut up valleys, the drunkenness, the bad nourishment, and the intermarriage of rela-

tives, just as in the Swiss and German mountains. And who has travelled much in the Highlands of Scotland without observing the immense number of deformed idiots with which he meets? And what are these deformed idiots? To all intents and purposes they are Cretins, which, according to the definition given above, are beings possessed of deformed bodies and fatuous minds, incapable of performing any mental, and more than a very limited proportion of physical offices, if any. We find in Scotland beings entirely destitute of idea, perception and thought, crooked, lame, bent, often double, frequently blind, deaf and dumb. And what are these but Cretins? They bear no difference to many of the Cretins of Valais or Styria, and from the majority of the Cretins of most countries are distinguished merely by the want of Goitre. I have lately visited one of these beings in the immediate neighbourhood of this town, at Braid, which may be compared with the account of the Cretin formerly given, or with one of Dr. Guggenbühl's cases, and the likeness will at once be observed to be complete.*

John ——— resides in a small cottage on the roadside, in a small valley of the Braid Hills, about four miles from Edinburgh. Although called "the boy" by his parents, he is at present thirty-four years of age, and in a perfect state of helplessness. When born, he was, according to the mother, whose only child he is, by no means a large infant, although she was delivered by instruments, and presented no unhealthy appearances for the first year or more of his life, beyond an imperfection in sucking, (which I have already mentioned as a peculiarity of infant Cretins). But at the time when other children begin to walk and notice, he became stupid and dull, and could not walk, on account of weakness of the legs. He lay at this time on the sofa, in

* The subject of this case has died since the above was written. Although this may be a mere coincidence, yet it may not improperly be viewed as an example of a former statement, that Cretins seldom exceed thirty years of age, or thereabouts.

his own corner, where he has lain almost ever since, and lies now, having never been able to stand or walk. At present his appearance is very peculiar, as the spine is bent almost at a right angle, the left ilium pressing upon the parietes of the chest. The back seems about the normal length, but the legs are small, slightly bent, and atrophied. The arms are long, but thin, drooping, and emaciated. His face presents a vacant stare, although he seems to have a slight degree of intellect, confined, however, to the understanding of questions relating to his food and the like. He can answer these questions by sounds like "*ah*" and "*no*," and can, besides, call attention to his wants by a third sound "*mu*," which is all he is capable of, and the full extent of his intellectual powers. From a slight paralytic affection of the cheeks, he cannot retain the saliva, which continually runs from his mouth, his tongue being also generally protruded. Besides this, he has no dirty habits, but gives warning of the calls of nature. The occiput is flattened, pretty much as I have described that of the Swiss Cretin to be, but otherwise the skull is normal. His abdomen is round and fat, and he possesses a scanty beard and moustache. His life is quiet and unvaried. He seems to have no desires, and his wants are well attended to, while he is the darling of his parents, for whom he has also a certain affection. This is the only family resident in the valley, but I doubt that I am at liberty to infer that more residents would bring more such idiots. However, several generations have lived in the house, the father was born where the son was, and therefore I consider the disease to be referable to the state of the valley, and perhaps to certain exhalations arising in it, rather than to any other cause. The most of the water used is hard, but frequently other water is obtained and used. This patient may be classed among Dr. Guggenbühl's congenital Cretins, combining the rickety with the atrophied. I omitted to mention that he seems very deaf, and the metacarpus is curiously distorted.*

* I am indebted to Dr. Howden, Assistant Physician at the Morningside Asylum, for bringing this case under my observation.

I knew also of a similar case, the subject of which died some time ago, in a little village at North Queensferry, in Fifeshire. The patient was a girl, who was a perfect idiot in mind, and deformed in body as much, if not more, than the poor "boy" at Braid. She lay all day without consciousness, and scarcely motion, "rolled up," so to speak, in a corner of the common room; did not move to perform even the necessities of life, never spoke, ate coals or anything, in a mechanical way, and made no attempt at recognising or looking at any one. I am told she was regarded as a witch, and am not aware how old she was when she died. Her residence was also in a small inclosed valley, where the parents had lived for years.

There is also a being of much the same description living in the town of Moffat, in Dumfriesshire. For the last twenty-seven years of his life he has, on account of his total deformity, been clad in a woman's gown, as the dress of man could not be made to fit him. He is, besides, barred into a sort of chair for support. He is highly idiotic, ill-natured, and revengeful.

I have been informed by a lady, of several much deformed and blind idiots living near Stirling, in the neighbourhood of St. Ninians and Bannockburn. These are, I doubt not, similar beings; and I feel sure, that strict inquiry and investigation would convince others as fully as I am convinced, that these unfortunate beings in no wise differ from the Cretins of the Alps and Pyrenees, and that similar causes are productive of both.

On the east coast of Fife there exist no small number of similar idiots in the various populous villages.

Now, that an hospital for the relief of Idiots, similar to that of Dr. Guggenbühl at Interlachen, has been established near Dundee, it would be well that an inquiry into the prevalence of Cretinism and Idiocy in Scotland should be made, and the system found so successful at the Abendberg be adopted here.

I find in the paper of Mr. Marshall on the Distribution

of Disease,* that he mentions the occurrence of Cretinism in Scotland in the following words:—"I have heard that Cretinism and Goitre are prevalent in a sheltered village, on the coast of the Island of Arran." The village alluded to is probably that of Shiskin, where I understand there are several idiots and deformed persons, but not having visited that part of the island, can form no opinion on the subject.

Another probable cause of Cretinism in the Alps of Switzerland and Scotland, perhaps too little considered, is the intermarriage of relatives. We know well from medical statistics that this is a fruitful source of disease and of idiocy. Of this, I may cite a few examples. Dr. Howe, in his Report on Idiocy, read to the Boston (U.S.) Medical Society, mentions, that out of 359 cases of idiotic children, seventeen were known to be the children of parents nearly related by blood, and, had all particulars been known, he doubted not more could have been added. This makes (as far as these few cases go) the proportion of idiots arising from this cause one-eighteenth of the whole; and if we consider how few such marriages there are in the great mass, the proportion becomes of more importance. Further, in his Report, he says,† in allusion to seventeen such intermarriages, "Most of the parents were intemperate or scrofulous, some were both the one and the other, so of course there were other causes to increase the chances of infirm offspring, besides that of intermarriage. There were born unto them ninety-five children, of whom forty-four were idiotic, twelve others were scrofulous and puny, one was deaf, and one was a dwarf." In other families, "in some cases all the children were either idiotic, or very scrofulous and puny. In one family of eight children, five were idiots.

We know that intermarriage of relatives in Scotland and Switzerland is not unfrequent, and that, among them, Idiots

* In the Edinburgh Medical and Surgical Journal.

† See Report of the Massachusetts Hospital for Idiots.

and Cretins are common. The island of Jersey also is a notorious example of this.

I have been informed by an American lady, who has spent a lifetime in endeavouring to relieve the situation of lunatics, and in studying their complaints, that the original French settlers in Canada, who have always lived alone, and held little communication or intermarriage with others than their own body, are now a poor, puny, stunted race, that idiots are very common among them, and that all are remarkably stupid, dull, and unintelligent.

Further, we know that the little fishing village of New-haven, near Edinburgh, is inhabited by a peculiar people, who came to this country probably from Denmark, and who retain to this day many peculiar customs, dresses, names, laws, and, to a slight extent, language. These people are different from all the surrounding populace, and mix but little with the people of the neighbouring towns and villages, except in trading. These people, then, do not intermarry with any one but those of their own clan, and gradually the race is degenerating, and while retaining their original peculiarities, are yet scrofulous and consumptive, and have not a few "*daft*" people among them, and, I have been informed, also idiots.

In the case of the previously mentioned island of Medwörth, near Coblenz, where so many Cretins exist, the inhabitants hold no connection with those on shore, and consequently intermarry constantly with one another. The cause of so much Cretinism here has, however, been also imputed to the frequent overflowings of portions of the island by the Rhine, and consequent damp exhalations.

Spermatorrhœa has also been mentioned as a cause of Cretinism, but to this I would attach no importance, considering how few, if any, become Cretins after the age of puberty.

IV.

I HAVE now left me to consider the last head of my subject, namely, What is the treatment to be adopted for the cure of such beings, or what steps are to be taken for the amelioration of their state ?

It is evident, since we have found the disease to be a physical malady, wherein there is an imperfect developement of the brain and of the rest of the body, that we must commence our system of cure by improving the bodily health, and the physical constitution. We must strengthen and improve the system, and then only can we hope to benefit the brain which is at fault. This restoration of the body we must produce by acknowledged therapeutic agents ; firstly, the removal of the patients from the places in which they were found, giving them plenty of good air, good food, exercise, bathing, some occupation, comfort, and enjoyment, and any medicines that may be required by them, such as cod liver oil, iodide of iron, mineral waters, &c., and, when we have succeeded in bringing the body to a certain degree of health, we can commence operating on the mind, which may gradually be improved. Of course, in such a mode of treatment, the youth of the patient is highly important. But although a similar mode of treatment was proposed by Fodéré, in his work published in 1800, and by Wenzel in 1802, who recommended that the Cretins should be removed from their native atmosphere, and be allowed to breathe a purer air ; and although Reeves, in 1809, asserted that the removal of Cretin children to the higher Alps would probably contribute much towards bettering their condition ; although M. Virey, in 1813, stated in the *Dictionnaire des Sciences Médicales*, that the obvious mode of curing the disease would be the employment of general remedies for the system, fresh air, good nourishment, exercise, care and affection, and the use of tonics and stimulants ; though Wenzel had himself some experience in this cure ; and though Dr.

Abercromby, in his Thesis "*De Fatuitate Alpina*," recommended its adoption in these words: *Ubi, tenerâ aestate, proclivitas in fatuitatem observatur, estne, quamobrem expectemus, tempestive roborantium medicamentorum et frigidarii usu posse obvienti mentis imbecillitati occurrî;*" yet we do not find any attempt made systematically to employ those means till the appearance of Dr. Guggenbühl in 1839.

It is interesting to observe that both M. Rambuteau and M. Fodéré, while opposing the idea of Cretinism being caused by snow-water, and laying the blame rather on the influences of bad air and humid exhalations, assure us, that at the close of last century the number of Cretins in the Canton Valais diminished to a very great degree. The former attributed this amelioration to the embankment of the Rhone, and the draining of the marshes which so much abound on its banks; to the clearance of the land, which produced an abundant vegetation; and the consequent changes in the character of the inhabitants, who became more industrious and active, and less given to gluttony and drunkenness. The latter author rather imputed it to the opening of the great Pass of the Simplon, and consequent more easy communication with other countries, the people being thus more incited to bestir themselves, and to take their children higher up the mountains, and, by the example of others, to fall into industrious and commercial habits. M. Ferrus too believed that this road improved the condition of the Cretins, by inciting them to travel, and not to lead a life of perpetual inaction, each being employed in its construction as far as his intellects would permit, and being in consequence bettered, by the change of air and climate, the exercise of the body and what mind he had. The same gentleman was of opinion that the excessive tenderness and compassion, the infinite regards which the parents of these unfortunates lavish upon them, seemed rather to hurt than benefit them, as it contributed to increase their indolence, ignorance, and stupidity.

From such, and similar observations, it was that Dr. Gug-

genbühl formed the idea of establishing an abode for Cretins, and place for their relief and cure.

Dr. Guggenbühl was born in the village of Meilen, in Canton Zurich, and is of the Protestant faith. He was travelling among the high Alps in the year 1836, where he was first struck with the appearance of these unfortunate beings, and longed to be able to do something for their relief. And having once formed this idea, the noble and unselfish mind of this great philanthropist resolved on it, and he set at once to work all the powers of his mind, all the strength of his body, the energy of his heart, and the resources of his worldly fortune, to the cause he had in hand. Nor have his labours been in vain. For two years after this, he lived in a small village called Sernf, in the Canton Glarus, where he devoted his whole time to the cause, and studied deeply and thoroughly the condition of the Cretin. As Dr. Twining says,* “the idea weighed upon him more and more heavily, that this numerous and degraded class of beings, who filled the valleys, were left to sink deeper in their misery, without one effort being made to help them.” And this impression was more firmly fixed on him by a second tour made in another of the mountainous parts of Switzerland. And now, as he examined the literature of the subject, which a century had heaped together; when he read the numerous treatises of Saussure, Fodéré, Ackermann, Wenzel, Iphofen, &c. and found that, in spite of all this writing, not one human being had been rescued from this mental abyss, and no practical improvement commenced, then it became clear to him that learned inquiry was but one element; the second and principal was, action,—the personal sacrifices and love which Howard and Fry gave to the prisoners,—Clarkson, Wilberforce and Buxton, to the slaves,—and Hans Egede to the blunted Greenlanders, and which alone could serve for the accomplishment of that great aim, the most difficult ever proposed in medicine, the restoration of the Cretins to the

* See Some Account of Cretinism. 1843.

form and condition of men. From this period Dr. Guggenbühl looked upon the healing and protection of Cretins as the great duty of his life, which he was to accomplish at any sacrifice. "I know not," says Dr. Alexander,* "that the history of philanthropy contains a finer passage than is furnished by the benevolent labours of Dr. Guggenbühl.* * * To such devoted and self-denying philanthropy it is impossible to pay too high a mead of praise." It was now that Dr. Guggenbühl brought the subject before the Swiss Association for the Advancement of Science, and asked their aid and support in forming an establishment for the treatment of Cretins. This was granted, and the Government of Canton Berne presented him with 600 Swiss francs for the commencement of the undertaking. Knowing as he did, that the principal advantage was to be derived from change and purity of atmosphere, as he found that the Cretins, when young, were improved by being taken up heights, he resolved that his proposed hospital should be at as high an elevation as practicable, and the patients, on whom his experiments were to be conducted, should be as young as possible. With this view, then, in the year 1840, he bought the hill called the Abendberg, near Interlachen, in Canton Berne, and erected his hospital upon it. Near the summit of this mountain, at a height of 1500 feet above the valley, and about 4000 above the sea, higher up than Cretinism ever occurs, the cottages forming the establishment were erected, free on all sides, on the southern slope of the hill, some hundred feet from the summit. About forty acres of land surrounding it belong to the institution. The soil is tolerably fruitful; potatoes and other vegetables grow well; and the pasturage is good. The soil is everywhere composed of a clayey mountain limestone. The prevailing winds are the south and south-west, and more rarely the north-west. In summer the weather is generally very beautiful and warm, but not the great heat of the village of

* See Switzerland and Swiss Churches.

Interlachen. The winter begins in November, and the snow remains lying till April, when the spring commences, and the summer shortly reappears, and quickly all standing water is completely dried up, and the exhalations put an end to. The view from this mountain is one of the most inconceivably beautiful in Switzerland; and when the fine morning sun illumines the whole, it is perhaps unequalled. Far below at our feet lie the two placid lakes of Thun and Brienz, with little craft shooting along on the bosom of their waters, right and left enclosed by mountain ranges and fierce crags; between the two, like a silver thread crossing the green valleys, with the little villages and buildings marking its course, runs the Aar, and the whole valley is filled with green fields and splendid nut trees. Towards the south-west opens on the view the valley of Lütschinen, leading to Lauterbrunnen and Grindelwald, and the heart of the Bernese Oberland, and bounded by gigantic precipitous mountains, some clothed with a rich verdure, others steep, bare, and craggy; and here, in a space between the nearest mountains, is afforded us a view of the beautiful Jungfrau, the Queen of mountains, the virgin bride of heaven, with her fearful but beautiful companions, the Eiger and the Monk, and the two rugged peaks of the Wetterhorn, pointing upwards to the clear blue heaven, contrasting so splendidly with the purity of their own perpetual snow. The view of grandeur and beauty in the scene is almost unrivalled. No one can gaze on such a scene without emotion, and it makes even on the blunted minds of the young Cretins a strong impression, as they open to a consciousness of their existence. This effect Dr. Guggenbühl has frequently remarked. In such a neighbourhood, all the phenomena of nature, such as the rising and setting of the sun and moon, tempests, thunder storms, rainbows, and the like, are seen in great perfection, and Dr. Guggenbühl has found them of infinite value in awaking the sleeping soul. The houses are built of wood, as it is a bad conductor of heat, and gives little opportunity for dampness, which is much to be avoided in the treatment of the disease.

There are about twenty rooms, among which are three large halls, a bathroom, and hall for gymnastic exercises in the winter season. All the rooms can be heated, and the dormitories are supplied with ventilators. The kitchen has an iron kitchen-range, and a basin for supplying the baths. Two fountains supply them with a pure excellent drinking water, which can be collected in two reservoirs. The mildness which Professor Heer and others have shown to exist in many parts of the Alpine world, during the first half of winter, is also prevalent at the Abendberg, and the winter is neither so cold nor severe as at the foot of the mountain. Dr Guggenbühl noticed that, in eleven years, the flowers bloomed again on their meadow, in December; and while the valley below is covered with fogs and clouds, at the hospital the residents enjoyed the most lovely sunshine. In winter too the cold is seldom under 0 of Reaumur;* and in April, as soon as the snow is gone, the spring flowers (*Galanthus*, *Gentiana*, *Crocus*, &c.) appear, and vegetation proceeds with astonishing rapidity.

Such then is the spot chosen by Dr. Guggenbühl for the establishment of the first Cretin hospital, the first institution having the avowed principle of relieving their pitiable condition. His process of cure has been described by many authors who have visited the spot, and all unite in bearing testimony to his perseverance and success. As Dr. Coldstream says,† “That success, taken along with the boldness of the conception, which contemplated nothing less than the cure of a malady hitherto deemed incurable, and that in an hospital situated at an elevation of 4000 feet, on the slope of the Alps, has doubtless had a powerful effect in directing the attention of the philanthropists of Europe and America to the feasibility of attempting to ameliorate the condition of the fatuous. And it must be acknowledged, that civilized humanity owes a large debt of gratitude to

* 32° Fahrenheit.

† Edinburgh Monthly Medical Journal.

the man who, almost single-handed, and in spite of difficulties of no ordinary magnitude, has done so much to prove 'that there is no condition of life utterly hopeless; and that wherever there is mind there is no imprisonment from which it may not be freed.' " Among the authors who have described the institution we find Dr. Howe of Massachusetts; Professors Troxler and Valentin of Berne; Dr. Gosse of Geneva; Dr. Rösch of Wurtemberg; Dr. Viszanik of Vienna; Dr. Buch of Hamburg; Dr. Hergt of Carlsruhe; Dr. Hutchenrath of Amsterdam; Dr. Twining of London; Dr. Wells of Reading; Dr. Morel of Mareville; Count Sanseverino; Dr. Marshall Hall of London; writers in "Chambers' Edinburgh Journal," and "Household Words;" Dr. Forbes of London; Dr. Coldstream of Edinburgh; Chevers, the American naturalist; Professor Holst of Christiana; Dr. Sella of Turin; Dr. A. Verger of Milan; Dr. Niepce of Avellan; Professor Leux of Marseilles, and many others. Thus we have the learned of all Europe giving their testimony to the efficiency of those means which Dr. Guggenbühl has adopted at his institution; and, despite disheartening ridicule and ill-natured doubts, it has remained, and will remain, a fitting monument to the philanthropic and noble founder.

Seeing then that so much has been already said on the subject, a very slight survey of his mode of treatment will be sufficient for our present purpose.

Having considered the causes of Cretinism, and having found it to be chiefly dependant on bad air, bad food, unhealthy origin, &c., and having found the symptoms to be atrophy and weakness of the muscles, complete loss of observation and mind, no memory, extraordinary appetite, coldness, laziness, dirty skin, and bad health, with convulsions and distortions of the frame, our first duty, in the process of cure, is to remove these causes, and improve the corporeal symptoms. The sooner then that the children are removed from the deleterious influences, and brought to such an institution, the more hope there is of recovery. Under all circumstances, the cure proceeds slowly,

and complete recovery could only be looked for when the children are sent to the Institution on the first appearance of the malady, and when they remain in it till the completion of their developement and education, until about the age of puberty. But even when complete cure is not obtained, yet always some improvement is noticeable, order and cleanliness are at least taught, and a certain mechanical education imparted. The means of cure, as employed in the Abendberg, are these. The first necessary is a pure, dry, and unconfined atmosphere, at a certain elevation from the sea. Next, it is necessary to have an abundant supply of water for drinking, washing, and bathing. The drinking water must be fresh, clear, and sparkling, must be of a good taste, and not hard. Cleanliness, constant washing, and bathing, are indispensable. Cold baths are found at first to do more harm than good, and, consequently, vapour baths are had recourse to, and douches on the neck, and those parts particularly where any deformity exists. The action of the skin is further excited, by brushing and friction with aromatic spirituous liquids, which are rubbed into the back and extremities morning and evening. For the same purpose, magnetism and electromagnetism are largely employed. Further, the system is altered by the internal use of salts of metals, which act on the nervous system; and of them copper is found to be the most valuable. Cretins are easily chilled, and almost always have cold hands and feet. On this account, they must be warmly clad—best in wool. Exercise in the open air is indispensable. It is provided for in Abendberg, in the free space before the house, or in winter in the hall. The young children who cannot walk, and the weak legged, are dragged about in chaises, or placed against banks, where they can stand or lie without fear of falling. When their legs can be used, they are encouraged to walk a few steps alone, then longer distances, then up a slope, and lastly up steps. This done, they are encouraged in the use of the various simple gymnastic exercises—leaping, hanging by the arms, swinging, &c. It is astonishing to see the pleasure which by degrees

they take in those exercises, and the pride shown at the mastery of any such task. Often the steps of improvement are few and far, very far, between ; and it is here, as much as in the instruction of the mind, that the patience of the teacher is tried. The diet of the children must be nourishing and abundant. On the Abendberg, they get milk, rice, meat, nourishing roots, except potatoes, and white bread. Their diet roll is the following :—Breakfast—a little more than a choppin of goat's milk and white bread. Dinner—milk and rice-soup, or meat broth, vegetables, veal, beef, and mutton, very tender, and cut into small pieces. In the afternoon, tea of herbs, and milk, bread or fruit. Supper—milk-soup, meat, broth, or egg-soup. The patients have always a large appetite, which is larger in proportion to the degree of their illness. Fresh water is given in abundance as well as milk. But, along with the dietetic, the medical treatment must be attended to, for the developement and formation of the tissues depend on healthy digestion, and the formation of good blood. This purpose is attained, partly by means which excite the digestive organs, and partly by those which remove quickly the undigested parts without weakening the system. The first effects are obtained by the use of aromatic bitters, among which, a tea of nut leaves is found to be invaluable, and the formation of healthy blood is found to be best assisted by the use of iron, in the form of a tincture of the muriate, or of the lactate and carbonate of iron. Mineral waters too are invaluable, and one of the best means for imparting nourishment is the cod liver oil, which is largely employed, more especially when the Cretins have glandular swellings, runnings, skin-diseases, caries of bones, inflammation of the eyes, and similar disorders. The second purpose is accomplished by remedies which act upon the skin, kidneys, and alimentary canal. For acting on the skin, baths, friction, and exercise in the open air. To excite the action of the kidneys, Dr. Guggenbühl has found a decoction of violets to be most valuable. Frequently diarrhœa is a complication of Cretinism, in which case, the diet must be dry, and the secretion by the skin

encouraged. Rhubarb in powder, or the tincture, has been the best substance for restoring and keeping up the tone of the stomach. Sometimes, too, strychnia is employed to excite the lax and powerless state of the muscles of the intestinal canal, and to call its peristaltic motions into action.

In such a manner the body is improved, which, having been done to a certain degree, more or less, the development of the mind is attended to. This is the more difficult task, as the mind, in most cases, exists as a mere germ, hardly discernible, though present. But this germ can increase, and also does so, as quickly as the bodily form improves, and the more the latter improves, the more the former asserts its influence. But the process of mental cure is longer, more tedious, and less promising than the physical. But how much more is the assiduous teacher repaid for his zeal and perseverance!

The first symptoms of intellect which is shown, is the sense of feeling, at first indistinct, but afterwards gradually increasing; the child becomes conscious of its existence, it is agreeably or disagreeably affected, it enjoys comfort and rejects annoyances. This is the first step, and though it may take long, yet when gained, the others follow rapidly. The mind being now shown, its education must be commenced. This must first be done by observing and gaining its affections. Often the children, on first coming to the Institution, show a strong longing for home, the characteristic homesickness ("heimweh") of the Swiss. This is conquered generally in a couple of days by attention to their wants, when they are pleased and grateful, and feel a liking for their benefactors. The young Cretin is at first shy, sulky, and selfish. But when his love is obtained, he is open, friendly, and generous. Love then is a talisman in the treatment; and love, not shown by the superintendent alone, but by all around, so that the child may gain complete confidence. Thus far advanced, future progress becomes easier. Here, however, great caution is required, and the exercise of the power must be very gradual, for if too much be attempted,

the child loses confidence, and then will do nothing. In such cases, punishment must be had recourse to, but with this, again, we cannot be too cautious. Corporeal punishment should almost never be attempted; but the best way is to deprive them of some little pleasure, such as playing in the garden, or the like.

The first real branch of instruction is the learning to speak. For this purpose, it is necessary to awaken the dull sense of hearing which the child possesses; and as, for this purpose, the sounds must be loud, or no impression will be made, a variety of tubes and speaking trumpets are employed. The sound being impressed on the mind, the child is coaxed to imitate it, by the formation of the lips and tongue, and constantly to repeat it; and thus, by a long continuance of this process, it gets through the letters. These letters are next put in their hands, carved in wood; and, as Dr. Howe of Boston taught Laura Bridgeman,* so they learn to form words from these letters, and to associate objects with the words, gradually, of course, first associating the sound of the letter with its form, that of the word with the combination of letters, and the object, and so on. Sometimes it is impossible, even in this way, to impress the mind; and then the child is taken into a dark room, and shown on the wall the forms of things and letters, written with phosphorus, a method which seldom fails in fixing them on the memory. At last the child learns to speak and understand,—to read, and to write. It is a gradual process, but, steadily pursued, is generally a sure one. As soon as the child can speak and understand, however imperfectly, its attention is directed to the existence of a Deity, an all-powerful God, the Maker of all things, and its Father. It is an observation made on the Abendberg, that the religious sentiments are very early awakened, and much deeper engrafted than in the case of healthy children. Next the phenomena of nature share their attention, and then they acquire the knowledge of

* See American Notes by Charles Dickens, and Kitto's Lost Senses.

things around them,—men, plants, trees, but especially, eatables. Then they learn to distinguish colours, forms, substances, and time. The sense of taste is exercised by sweet, sour, bitter, and pungent substances. Smell is similarly taught, and, for these two purposes, plants are chiefly employed. Almost all Cretins are fond of music, and, indeed, take an infinite pleasure in it. Hearing then is exercised by means of bells, singing, and instrumental music, especially the organ. Large pictures with bright colours are found invaluable. Then they learn to read and write, gradually, but surely. Arithmetic is taught by the counting frame, and is generally easily acquired, as most patients show an aptitude for figures. After this comes mechanical instruction, commencing in the girls' case with sewing; and in the boys' with gardening, and such like; but rising to much higher branches, for many become practical farmers. The mingling of the children in different stages of developement is practically found to be of immense value, as it excites them to improve and rise in the various steps.

It is in this manner then that Dr. Guggenbühl conducts this establishment, and has carried on the treatment with infinite success for fifteen years. He desires that, for the cure, the patient should be at the establishment not less than three years, to do his treatment justice, though some may require five or six years' residence. So successful has he been in his treatment, that, out of the numbers he has had, a third have left perfectly cured. I subjoin a few of his later cases, as examples of the cures which he now daily accomplishes.

CASE I.*—A. R., a boy, on admission, four years old, has healthy parents, the father, a strong young Dane,—the mother, a healthy Frenchwoman. In the mother's family Cretinism was first noticed in the present generation, without being attributable to any certain cause. The boy was born

* Translated from Dr. Guggenbühl's Last Report.

normally, but, after the elapse of a very short time, he showed a very large unsymmetrical head, in which the right parietal bone projected half an inch over the left. At three years old, he could walk a little, but still, on admission, was constantly falling. His body was soft and puffy, his belly large, and he has incontinence of urine. His size was proportioned to his years; his features regular; the circumference of his head, 21 inches, its long measurement, 14 inches 9 lines, and its short one, $12\frac{1}{2}$ inches, wedge-shaped, and broad behind. In his second year, he showed all the symptoms of *Mollities ossium*: the epiphyses swelled largely; the metacarpal bones were driven out, and he lost the ring finger of the left hand by caries. The intellectual appearance of the boy was characteristic of the so-called irritable idiocy, constant agitation and distraction; unable to collect ideas, to all he saw, he cried "*Ca pique! Ca pique!*" [A sister's son, 14 years old, shows a still more marked degree of the same state, the sternum is driven out (pigeon-breasted), the metacarpus swollen; his corporeal weakness renders him unfit for any labour; and, though all perseverance was exerted for his intellectual reformation, yet he has not learned to read or write. His speech is stammering and indistinct, and his thoughts and associations as confused as those of the insane.] The medical treatment of the little A. R., along with baths, and rubbing in the sun, and goat's milk diet, consisted in the employment of the Syrup. Iod. Ferri, so frequently used in other cases. Under the use of this, his bodily development proceeded rapidly; in six months his walk was normal; the swellings of the bones disappeared, though they returned in winter, and could not be said to be perfectly cured before two years' treatment. But, even after so much had been accomplished, it was found the greatest task by any means to fix his attention. "*A. fait aucune attention*" is constantly recorded in the journal. He was at last tried with the phosphorescent pictures in the dark, which succeeded. He became gradually interested in the illustrations of flowers, and took pleasure in picking them again in the fields. In the same way he learned letters, syllables, words,

and verses, but the prime difficulty was writing, the formation of a single stroke was a great task. His character was good-natured, sociable, and obedient. The slightest reproof made him cry, and it was some time before he could re-apply himself to work. At last, cured, he was dismissed to join a children's school.

CASE II.*—H. E., a boy, on admission seven years old, had a sickly father, but mother, and four brothers and sisters healthy. His developement was slow; he was weak from birth, his walk was always shaky and uncertain, his speech was an indistinct babble, with a distinct nasal twang. On his reception in the Abendberg, his face had a green colour, he had clear lively eyes, good natured expression, thick tongue, mucous membrane of mouth pale and cold, the lips swollen, the hard palate much misformed, the head flattened at the sides, otherwise symmetrical, circumference 17 inches, long measurement $12\frac{1}{2}$, and the short 9 inches; the occiput much projecting, the upper extremities weak, so that he could not balance himself with them; his walk was staggering, uncertain, with the body doubled up; general leanness: nowhere symptoms of scrofula; length 34 inches, weight 40 lbs. His character was good natured, easily irritated and made cry; and when any one left the house, he was no longer friendly with him. His appetite was not excessively large, and he was very manageable. At school the boy could not be taught, and he came to the hospital a true *tabula rasa*. First his general health was improved by iron, exercise, gymnastics, and the like. All at once he began to draw, and sketched the carriage with the children, which he showed with great glee. By and by he drew very pretty flowers, beasts, and houses, and showed a good idea of perspective. As German, his native tongue, was too difficult for him, he was taught French, which he at length mastered. Soon he could write, read, and

* From the same Report.

understand what he read, and also write very pretty little letters. The short measurement of his head increased one inch in three years, the others remaining as before. His mental developement far outstripped the physical, for he is still small of his age, and bears marks of Cretinism on him, which have entirely disappeared in others who were treated at an earlier age. On leaving, he went to the Orphan Hospital at Bâsle, from which always good accounts of him are sent; and he hopes soon to commence a trade, and make his bread.

CASE III.*—M. Ch., a girl, on admission thirteen years old, was the child of healthy parents and had two healthy sisters. She was born apparently healthy, but soon became weakly, and only learned to stand when three years old. She had no power of speech, or any mental faculty. The head measured in circumference $18\frac{1}{2}$ inches, lengthwise $12\frac{1}{2}$, and crosswise 10 inches; the occiput strongly projecting; the flattening at the parietes not much marked. The face pale, general leanness, the eye dark and dull, tongue normal, hard palate deeply hollowed, teeth complete, hearing obtuse, a Goître, awkward gait, tripping with the feet; length fifty-five inches. Not only was speech absent, but the voice, for the girl was unable to produce a loud sound, and remained three months in this state. Her character was, on the whole, good natured; she soon learned to occupy herself with household matters, and nursing the smaller children. At first her voice appeared very slightly, but gradually improved, till in six months she could articulate sounds. She first learned the numbers, then the names of various objects, honey, rice, sugar, bread, salt, &c., then the wild flowers, thyme, gentian, nightshade, daisy, &c., then butterflies and birds, and so on. She can now read, but with the unmodulated voice of a deaf mute; but can write well, and is very clever in managing a household. She was dismissed to learn millinery.

* From the same Report.

CASE IV*—J. F., a boy, on admission seven years old, was in a most pitiable condition. The father was a confirmed brandy drinker, the mother delicate, and they lived in a damp house. The boy showed no symptoms of disease at birth, and grew well all his first year, at the expiration of which he was afflicted with a scrofulous eruption of the face, which entirely covered, and, for some years, prevented his opening his eyes. His mental developement was at the same time interrupted, and, although he had been repeatedly admitted into the Canton Hospital at Lausanne, yet no permanent relief had been afforded him, so he was sent to the Abendberg. On admission, the length of his body was thirty-eight inches: he had slightly atrophied limbs, the face was covered with a thick crust, the eyelids so swollen that he could never open his eyes, the nose thick and disproportionately swollen, tongue thick, saliva running from the mouth, teeth regular, the hard palate furrowed, the neck having several swollen glands as large as fists, which hindered its movements; his walk was unsteady, crouching, often falling. For several months the boy lay continually on his face on the ground, and was with difficulty moved or placed in another position. His idiotic condition was perceptible at a glance; he could say nothing but "*mimi*," which he constantly repeated, especially when hungry; he was filthy, and, the whole of his sleepless nights, shook his head from one side to the other. His appetite was tremendous, and he ate everything he could lay hands on, without ever being satisfied. The formation of the cranium was regular, circumference 18 inches, long measurement $13\frac{1}{2}$, short measurement $11\frac{1}{2}$ inches. Only a slight depression was observable over the orbits. This boy having been brought under treatment, in six months opened his eyes; his face and cervical glands lost their tremendously swollen appearance. For three years his form gradually improved, and at the same time his mental developement proceeded; he now

* Also Translated from Dr. Guggenbühl's First Report.

understands what is said to him, is attentive, obedient, and clean.

CASE V.*—"C. was four years old when she entered, with every symptom of confirmed Rachitic Cretinism. Her nervous system was completely out of order, so that the strongest electric shocks produced scarcely any effect on her for some months. Aromatic baths, frictions, moderate exercise, meat regimen, and milk, were the means of restoring her. Her bones and muscles grew so strong that, in the course of a year, she could run and jump. Her mind appeared to advance in proportion to her body, for she learned to talk in French as well as in German. The life and spirits of her age at length burst forth, and she was as gay and happy as before she had been cross and disagreeable. She was particularly openhearted, active, kind and cleanly. She learned to read, write, and cypher, sew and knit, and above all, she loved to sing. It is now two years since she left, and she continues quite well, and goes to school. This is an important fact, because in her family there is a strong tendency to Cretinism, and the climate of the Canton of Valais, where she is, is fatal to all developement."

CASE VI.†—Marie Gh., of the Canton Berne, was admitted in May 1841, at the age of two. On admission, she had total prostration of intellect; the head inclined like that of a new born child; muscles lax, flabby, and skin cold to the touch. She had a scrofulous abscess in the neck, and the bones of the hand were swollen and deformed. She was dumb, although she showed no want of vivacity; she smiled always on her mother, and recognized others. This symptom gave Dr. Guggenbühl great hope, because by it he perceived that the intellectual faculties were not so much disturbed as he had supposed. At the time of admission the circumference of the head was fifteen inches, and from

* Reprinted from Dr. Coldstream's "Alpine Retreat of the Abendberg."

† Translated from the "Annales Medico-Psychologiques."

the nasal bones to the occipital spine thirteen inches. After thirty months' residence in the Abendberg, it gained two and a half inches in girth. In two months a change was visible in the external appearance of the child, so much so, that the mother, on visiting it, did not recognize her daughter. But it required a whole year to strengthen the limbs a little, and, at the commencement of autumn, she could eat alone, and conduct herself properly. At last she could articulate the vowels, but still more slowly she learned the consonants; and, with infinite trouble, her speech was entirely formed. In four years she knew by heart some little prayers; she could crochet and knit, and do other little works. And now her growth and developement are entirely in keeping with her age, and her intellect has made similar progress.

Such are a few,* out of the many cases, which might be selected, to prove that Cretinism is no longer to be considered as an incurable malady; that patience and care can accomplish, in this disease, great changes, and it is no less manageable than any other physical or mental defect.

The example which Dr. Guggenbühl gave, has now inspired many others with the desire of benefitting the unfortunate Cretins and Idiots. Many of those who have revisited his establishment have become interested in the matter, and the Abendberg stands no longer alone. The countries of Wurtemberg and Saxony, Austria and Prussia, France and Bavaria, Baden and Sardinia, have followed the example, and established similar benevolent institutions.

Nor has England been behind hand in the good work. At Bath a lady has established an hospital for fifteen Idiot children of that town; a similar school was lately opened at Wells; and, in 1847, a new society was formed, for the

* To these the following is well worthy of being added: Dr. Odet is an interesting example of the cure. He was himself a Cretin in the first stage, and, through the most careful attention, recovered so as to be able himself to write an *Essay upon Cretinism*. This was published at Montpellier in 1825.

purpose of educating and providing for Idiots. Their institution is at Highgate, near London.

At Barre, in the State of Massachusetts, a like establishment has been set on foot by Dr. Howe.

Within the last few months an institution for the cure of the fatuous has been opened near Dundee, conducted upon similar principles, and having the same benevolent object in view. That these and similar institutions may increase and flourish, until, perhaps, a happy period should arrive when there will be no further need of them, is the fervent prayer of every Christian and right thinking man.

Postscript.—Since the above pages were written, in the month of October last, another Scotch institution, for the same purpose, was opened in No. 10. Gayfield Square, Edinburgh, under the superintendence of Drs. John Smith and Coldstream. See Edinburgh Medical Journal for September 1855.

FINIS.

