appears to lapse at any time and fits become more numerous, they may be withheld, and syrup bromocarpinæ, one to two drachms thrice daily for a child of five to seven years, given in their stead temporarily for a period of a few weeks. In a few cases of petit mal in children who are otherwise healthy, bright and intelligent, ephedrine hydrochloride, half a grain twice a day, has sometimes worked extremely well.

In the general daily management of epileptic children, constipation must be avoided, and they should be encouraged to lead a normal life and attend school if possible.

Dietetic treatment consists in inducing a ketosis by means of a high fat—low carbohydrate diet. The ratios employed are from a F1: C1 to a F4: C1. Specimens of ketogenic diets may be found in Miss Simmonds' *Handbook of Diets* (Heinemann, 1931). This method of treatment should only be used for children who are mentally normal, and luminal or bromide therapy is usually combined with it. The results are in some cases encouraging. The value of the ketogenic diet probably depends upon its dehydrating effect upon the tissues.

In *status epilepticus* the convulsions follow one upon the other so quickly that consciousness is not regained between attacks. The chief danger to life is heart failure from toxic degeneration of the cardiac muscle. Provided the physical condition of the patient is normal, the most efficacious and rapid means of overcoming the fits is the hypodermic injection of morphia, grains 1/12, 1/16, or 1/20, according to age. Hyoscin hydrobromide, grain 1/500, may be combined with the morphia. Rectal injections are usually returned during a convulsion which interferes with the administration of chloral or paraldehyde by that route. During the stage of recovery the lower bowel should be washed out with enemata.

THE HIPPOCRATIC TRADITION.

By MATTHEW B. RAY, D.S.O., M.D. (Edin.)

Part II.—Ancient Greek Philosophy.

Having, in Part I., briefly touched upon the mythological side of ancient Greek Medicine, and glanced at the mystic practices of religious healing, a little consideration must now be given to its philosophical side.

In the Hippocratic writings, reference is made in several places to the attempts of philosophers to bring medicine under the control of philosophic dogma and thereby hinder its progress. According to Celsus, Hippocrates first separated medicine from philosophy, which, as Dr. Moon says, was accomplished by directing men's minds away from the nebulous theories and unverified hypotheses of the early Ionian physical cosmologists and leading them to the observation of facts which must ever be the main foundation of medicine. The Hippocratic writings do, nevertheless, show the influence of certain philosophers and, in order to see them in their proper light, some passing reference must be made to them.

Pythagoras (Circa 550 B.C.). While the fame of Pythagoras rests mainly on his researches into numbers and geometry, he had also a great influence on the medical thought of his day. In common with other philosophers he tried to reason out and explain the cause of disease. The doctrine of immortality and the transmigration of the soul has been traced to him. He also taught

the kinship of all living beings. The Pythagorean rule of abstinence from flesh as food was no doubt connected with this doctrine. At Crotona, a Dorian colony in the south of Italy, where he spent the greater part of his life, a religious organisation or brotherhood grew up around him. He was supposed to have migrated there about 529 B.C.

Alcmæon, who also lived at Crotona, is mentioned by Iamblichus as being one of the disciples of Pythagoras. Fragments of his work show that he wrote on biology, medicine and philosophy. He introduced the theory of "opposites". For example, he observed that in human beings there were two, *i.e.*, the hot and the cold, the moist and the dry, and disease came into existence when one of the four gained ascendancy over the others. Hippocrates engages in a tilt against this theory in "Ancient Medicine".

Heracleites (535 B.C.) believed in the unity of opposites—night and day, summer and winter, cold and hot. He said that all things are in a flux. All is motion. Life is a continual decomposition and renewal. All opposites disappear in pure fire. The human soul, such as is endowed with reason, is an emanation from the universal mind. He made the celebrated observation that no one can step twice across the same stream.

Parminides (Eleatic School) taught that only that can exist which can be thought. Thinking and being are the same. He disbelieved the senses because they represented things as changing when they are in reality fixed. This view is opposed by Hippocrates in "Ancient Medicine".

Empedocles (500 B.C.) discovered that the atmosphere was a distinct corporeal substance. He described the four elements, *fire, earth, air and water* as always alike, unchangeable and all equal. They were in juxtaposition and not a mixture. The Medical School of Hippocrates identified these elements as the *hot, the cold, the dry and the moist*. From these came the four humours—*blood, phlegm, yellow bile and black bile*.

Anaxagoras (500 B.C.) held that nothing passes away. What men call coming into existence and passing away is in reality mixture and separation. He taught the indestructibility of matter, that nothing can proceed from nothing, and that the universe can only be an arrangement of existing things.

Hippocrates.

Hippocrates was born about 460 B.C., in the island of Cos, near the Ionian coast of Asia Minor. He was the son of *Heraclides*, a physician belonging to the *Asklepiad* family, from whom he received his earliest instruction in the Art of medicine. He apparently left his native island when quite young and went to Athens, where he continued his medical studies under *Herodicus* of Selymbria, the brother of the famous sophist *Gorgias* of Leontini. Herodicus is reputed to have been the first to employ gymnastics in the treatment of disease and for the preservation of health.

Hippocrates practised in the island of Thasos, at Abdera and at other towns in Thessaly. In his book on "Epidemics" mention is made several times of Thasos. Following the custom of other physicians of the epoch, he evidently wandered about from place to place. The first patient of note that he attended was *Perdiccas*, king of Macedonia.

He established a medical school that became famous throughout Greece. *Plato* recommends this school to all who wished to become physicians. *Plato* refers to him as being of the Asklepiad family, and this, of course, raises the important question as to who the Asklepiads were. Originally they were, no doubt, descendants of Asklepios, and as the cult grew there was gathered around it a large and exclusive class of priest-physicians who claimed that their knowledge of healing was hereditary. It is extremely doubtful, however, if the Asklepiadai at the time of Hippocrates held such dual offices. According to Dr. W. H. S. Jones, the Asklepiadai were a guild supposed to have been founded by Asklepios, the members of which were bound by rules and subscribed to the Hippocratic Oath.

The oath begins: "I swear by Apollo, physician, by Asklepios, by health, by Panakea and by all the Gods and Goddesses, etc., etc." There must, therefore, have been some connection between Hippocrates and the "temple medicine" of that time. It is quite possible that this may have been mere "lip-service", as there is nothing of the nature of mysticism in any of the Hippocratic books. Of course, the expression "Asklepiad family", may have been used to designate the whole group of doctors much as in these days one hears the expression, "son of Galen". Cawadias*, in discussing the relationship between religious medicine as practised at the temples and that pursued by the Asklepiadai, suggests that, while the priests realised that there were limits in the action of mind over body and that their god could not do everything, they were probably very careful to send to the physicians who had their schools near the temple of Asklepios the organic cases.

The Hippocratic Oath.

I swear by Apollo, physician, by Asklepios, by health, by Panakea, and by all the Gods and Goddesses, making them my witnesses, that I will carry out, according to my ability and judgment, this Oath and this Indenture, to hold my teacher in the art equal to my own parents; to make him partner in my livelihood; when he is in need of money to share mine with him; to consider his family as my own brothers and to teach them this art, if they want to learn it, without fee or indenture; to impart precept, oral instruction, and all other instruction to my own sons, the sons of my teacher, and to indentured pupils who have taken the physician's Oath, but to nobody else.

I will use treatment to help the sick according to my ability and judgment, but never with a view to injury and wrong-doing. Neither will I administer a poison to anybody when asked to do so, nor will I suggest such a course. Similarly, I will not give to a woman a pessary to cause abortion. But I will keep pure and holy both my life and my art. I will not use the knife, not even, verily, on sufferers from stone, but I will give place to such as are craftsmen therein.

In to whatsoever houses I enter, I will enter to help the sick, and I will abstain from all intentional wrong-doing and harm, especially from abusing the bodies of man or woman, bond or free. And whatsoever I shall see or hear in the course of my profession, as well as outside my profession in my intercourse with men, if it be what should not be published abroad, I will never divulge, holding such things to be holy secrets.

Now if I carry out this Oath, and break it not, may I gain for ever the reputation among all men for my life and for my art; but if I transgress it and forswear myself, may the opposite befall me.

*Annals of Medical History, Vol. 3, No. 5.

The Hippocratic Writings.

The Hippocratic collection comprises seventy books. By reason of their sharp contradiction in doctrine and their many divergencies in style, they cannot possibly have been the work of a single author. Dr. W. H. S. Jones, in his scholarly analysis of the "Corpus Hippocraticum" (Hippocrates, Vol. 1.), suggests that the collection should be regarded as the remains of a library and more than likely it represents that of the medical school of Cos. He points out that such a library would contain precisely the kind of books that make up the Hippocratic writings, *viz.*:—the works of the greatest of the Asklepiadai, whether published or not, valuable works and works by distinguished professors of the school and for the most part unpublished, various works of no great interest or value, presented to the library or acquired by chance.

The limitations of space will scarcely permit a list of the books included in the Corpus Hippocraticum let alone any allusion to even their barest outlines. All that can be attempted is a few extracts from the best known works which indicate the main ideas underlying Hippocratic medicine.

Three of the books selected will be dealt with in this article, *viz.*:—*Ancient Medicine; Airs, Waters and Places*, and *Aphorisms*. The remaining four, *Epidemics*, *Prognostic*, *The Nature of Man* and *The Sacred Disease*, will be considered in Part 3.

1.—Ancient Medicine.

The writer begins by protesting against the assumption of a single hypothesis or "postulate" as a basis for the discussion of the art of medicine. The kind of postulate the Hippocratic writer no doubt had in his mind, was that of Empedocles, who made the four chief opposites—fire, air, water and earth—the components of the body, and disease an excess of one or the other. Such an expedient, he holds, could well be left for the explanation of the insoluble mysteries in the sky or below the earth, whereas the subject of enquiry and discussion is simply and solely the sufferings of ordinary folk when they are sick or in pain. He then goes on to say that the Art of Medicine would never have been learned, as there would be no need of it, if the sick had profited by the same food and manner of living as the healthy. Our present ways of living for example, have been discovered and elaborated over long periods of time, during which all kinds of experiments have been performed and fresh discoveries are constantly being made, not only with regard to food and drink but with gymnastics and athletic exercises.

We find it stated in the Hippocratic text that it is the physician who makes only the smallest mistakes who is worthy of the greatest praise. Most physicians, he remarks, seem to be in the case of bad pilots. The mistakes of the latter are unnoticed so long as they are steering in a calm.

As a proof that constitutions differ, it is pointed out that some men are able to vary the number of meals from day to day with impunity, while others suffer great discomfort if they change their respective habits for a single day. Some constitutions are therefore weaker than others and a weakly man is but one step from a sickly man. He then returns to the theory of those who prosecute their researches in the Art by building on a postulate or by promulgating a hypothesis framed with a view to unification rather than by accounting for all the facts. It will be remembered that the minds of the ancient Greek philosophers were exercised with the one question, *viz.*:—that of understanding the underlying substance of the

world and they were constantly endeavouring to find a simple explanation that would cover all the facts. In other words, all their ideas tended towards unification of the universe. Speaking of those philosophers who postulate the substance of the world as cold, hot, dry or moist, Hippocrates says there is no absolute cold, dry, hot or moist. These attributes are abstractions and do not exist alone. Hotness or coldness only exists as something hot or cold. It is futile to tell a patient to take something hot when he is cold because he would at once ask—what hot thing? So they must either talk nonsense or have recourse to one of these known substances.

Hippocrates believes that of all the properties, none hold less sway in the body than heat and cold because when they are mixed up they cause no pain. He describes the reaction that occurs after exposure to heat or cold. In saying that heat readily passes into cold and cold into heat, no doubt he had malarial attacks in his mind. Men are not feverish through heat alone, as that could not be the sole cause since the same thing may be both bitter and hot or acid and cold, and so on. He instances a cold in the head where the discharge from the nostril is more acrid, the nose becomes swollen and inflamed. The inflammation ceases when the discharge becomes thicker and less acrid.

The term "coction" is employed, about which the ancient physicians thought a good deal. It implies a combination of the opposing "humours" resulting in a perfect fusion of them all. The theory underlying most of the Hippocratic writings was that the body was made up of opposite humours. The number varies according to the writer. Four are usually described, *viz.*:—blood, phlegm, black bile and yellow bile. These were probably suggested by the commonest complaints in Ancient Greece—chest troubles and malaria. Hæmorrhage in fevers, yellow and black bile suggested by the vomits in malaria. When there is an outpouring of the "bitter principle" which is called yellow bile, great nausea, burning and weakness are present. When the patient gets rid of it by purgation, either spontaneous or by medicine, he manifestly gets rid of the pain and heat. So long as these bitter particles are undissolved, undigested and uncompounded, by no possible means can the pain and fever be stayed.

He then gibes at the philosophers who say that nobody can know medicine who is ignorant of what man is—he who would treat patients must know this. His view is that all that the philosophers or physicians have written on natural science no more pertains to medicine than it does to painting. His argument is that a physician can obtain all the knowledge needed of natural science by the practice of his Art. Reverting to the principles of dietetics, he instances cheese which some folk can eat and others cannot. He explains this by saying that the constitutions of these men differ and the difference lies in the constituents of the body that are hostile to cheese and are roused and stirred to action under its influence.

The last section of the book deals with the ease with which a sweet humour turns acid, an observation which can be confirmed by many. He ends with the somewhat cryptic dictum that, "the best is always that which is furthest removed from the unsuitable."

2.—Airs, Waters, and Places.

In this book it is pointed out that the effects each season of the year can produce must be considered, as the seasons are not all alike but differ both in themselves and in their changes. The next points discussed are the hot and cold

winds, especially those that are universal as well as those peculiar to each particular region. Attention is also paid to the aspect of the town, also the drinking water, whether marshy and soft, or such as are hard and come from rocky heights; and the soil, whether bare and dry, wooded and watered, hollow and hot or high and cold.

By their study it is claimed that a physician can tell what epidemics will attack the city, either in winter or summer; he remarks that these things belong to meteorology, it will be found on second thoughts that astronomy has a very great contribution to make to medicine for with the seasons men's diseases, like their digestive organs, suffer change.

In a city exposed to hot winds and sheltered from the northerly breezes with a surface water-supply, plentiful, but brackish, it is held that the heads of the inhabitants are moist and full of phlegm. They are of flabby physique and poor eaters and drinkers, for men with weak heads will be poor drinkers as the after effects are disturbing to them. The women are unhealthy and the children liable to convulsions and asthma as well as to the sacred disease (epilepsy). Men suffer from dysentery, diarrhoea, ague, eczema and hæmorrhoids. Cases of pleurisy, pneumonia, ardent fever and acute diseases rarely occur because these maladies cannot prevail when the bowels are loose. Mild inflammation of the eyes may occur. When the inhabitants are more than fifty years of age, they are paralysed by catarrh supervening from the brain when the sun suddenly strikes their heads as they are chilled.

In cities facing the cold, but sheltered from the hot winds and from the north, the waters are generally hard and cold. The inhabitants are sinewy and spare. Their digestive functions are sluggish. They are bilious, rather than phlegmatic. Their heads are healthy and hard. Pleurisies are common, likewise acute diseases. Their digestive organs being hard, the slightest cause produces abscesses—the result of a stiff body and hard digestive organs. Such constitutions make men drink little and eat much for one cannot be both a great eater and a great drinker. They are, however, long lived. Men under thirty suffer from violent nose-bleeding. Many women become barren owing to the hardness of the water. If they do bear children, they can only rear them with difficulty, for their milk is dried up through the hardness and indigestibility of the water. Cases of phthisis are frequent after parturition.

Cities that lie towards the rising of the sun are likely to be healthier than those facing north and those exposed to the hot winds. The heat and cold are moderate. Waters from springs that face the rising of the sun must be clean, sweet-smelling, soft and delightful, because the sun shining down upon them where they rise, purifies them. The persons of the inhabitants are of better complexion and more blooming than elsewhere. They are clear-voiced and with better temper and intelligence than those exposed to the north.

Those cities that lie towards the settings of the sun and are sheltered from the east winds, while the hot winds and the cold winds blow past them, have a most unhealthy situation. In the first place, the waters are not clear on account of the morning mist which dissolves therein and destroys their clearness, the sun not shining upon them until it is high in the heavens. In the summer, cold winds blow in the mornings and there are heavy dews: For the rest of the day, the sun as it advances towards the west, scorches the inhabitants so that they are pale and sickly. They are likely to have deep, hoarse voices.

After considering other ailments likely to affect the dwellers in these regions he goes on to deal with various kinds of waters. He says the influence of water on health is very great. Such as are marshy and stagnant must be hot, thick and stinking in summer and as fresh rain is continually added and are heated by the sun, they must be of bad colour, unhealthy and bilious. In winter they must be cold and turbid and conducive to phlegm and sore throats. Those who drink such water have large soft spleens (This is no doubt the enlarged spleen so common in malaria.). Their flesh dissolves to feed the spleen, leaving them emaciated. With such a constitution, they eat and drink heavily. In the summer there are epidemics of dysentery, diarrhoea and long quartan fever (malaria). In winter the young people suffer from pneumonia and illness attended by delirium. Babies at birth are big and swollen and, as they are nursed, they become emaciated and miserable. The next worst are those whose springs are from rocks—for they must be hard—or from earth where there are hot waters, iron, copper, gold or silver, sulphur, alum or soda or bitumen. All these he thinks result from the presence of great heat. The best are those that come from high places and earthy hills. They are sweet and clean. In winter they are warm and cold in summer. (They would naturally be so coming from deep springs.) He commends those whose flow breaks forth towards the rising of the summer sun.

After considering spring waters he refers to rain and snow water. Rain waters are the lightest, sweetest and cleanest, because the sun draws up the finest and lightest part of water. He points out that even in man it raises the finest and lightest parts of his juices and illustrates this by saying that when a man walks in the sun wearing a cloak, the parts of his skin reached by the sun will not sweat for it draws up each layer as it appears. But those parts sweat that are covered by a cloak or anything else. When a man comes into a shady place his whole body sweats as the sun no longer shines upon it. For this reason, too, rain water grows foul quicker than any other. When it has been carried aloft and combined with the atmosphere as it circles round, the turbid dark part separates out and changes into mist and fog. Rain water, although the best, needs to be boiled and purified from foulness which may cause sore throats and give coughs and hoarseness.

Waters from snow and ice are all bad for once water is frozen, it never recovers its original nature.

Stone, kidney disease, stranguary and sciatica, are apt to attack people who drink waters of different kinds, such as those impregnated with salt, alum, and from hot springs.

The effects of different seasons of the year are also commented upon. Thus with a rainy autumn, a moderate winter and seasonable rain in spring and summer, the year is likely to be healthy. A dry winter with a northerly wind, a rainy spring and a southerly wind, brings a fever-laden summer with much ophthalmia and dysentery.

The rest of the book is taken up with the effects of climate on the character of various races: Egyptians, Lybians, Asiatics, Scythians, etc.

3.—Aphorisms.

This is the best known work in the whole Hippocratic collection. As late as the nineteenth century it has been called the physician's bible. The tradition is that Hippocrates composed the work in his old age. To a certain type of mind the aphorism has always more attraction than a well considered discussion. It is more or less a short-cut to knowledge. One is inclined to the view that the

aphorism occupies much the same place in the medical world as the proverb in certain countries. It is always said that the most backward countries have the greatest number of proverbs.

There are a great number of aphorisms. The titles alone according to Adams, occupy ten pages in the edition of Littre, and still more in that of Kuhn. The following is a small selection.

1. Life is short, the Art is long, opportunity fleeting, experience treacherous, judgment difficult. The physician must be ready not only to do his duty himself, but also to secure the co-operation of the attendants and of externals.

13. Old men endure fasting most easily, then men of middle age, youths very badly, and worst of all children especially those of a liveliness greater than normal.

15. A sloppy diet is beneficial in all fevers especially in the case of children and of those used to such a diet.

2/2. When sleep puts an end to delirium, it is a good sign.

2/4. Neither repletion nor fasting nor anything else is good when it is more than natural.

2/5. Spontaneous weariness indicates disease.

21/2. Strong drink dispels hunger.

2/26. It is better for a fever to supervene on a convulsion than a convulsion on a fever.

2/16. When on a starvation diet the patient should not be fatigued.

2/48. Pains and fevers occur when pus is forming rather than when it has formed.

1/3. It is chiefly the changes of the seasons which produce diseases and in the seasons the great changes from cold or heat and so on according to rule.

10/3. Autumn is bad for consumptives.

19/3. All diseases occur at all seasons but some diseases are more apt to occur and be aggravated at certain seasons.

20/3. In Spring, occur melancholia, madness, epilepsy, blood flux, angina, colds, sore throats, cough, skin eruptions and eruptions turning generally to ulcers, tumours, and affections of joints.

21/3. In Summer occur some of the diseases just mentioned and also continued fevers, ardent fevers, tertians, vomiting and diarrhoea, eye diseases, pains of the ears, ulcerations of the mouth, mortification of the genitals, sweats.

22/3. In Autumn occur most summer diseases with quartans, irregular fevers, enlarged spleen, dropsy, consumption, strangury, lientery, dysentery, sciatica, angina, asthma, ileus, epilepsy, madness and melancholia.

22/4. In Winter occur pleurisy, pneumonia, lethargus, colds, sore throat, coughs, pains in the sides, chest and loins, headaches, dizziness and apoplexy.

8/5. Pleurisy that does not clear up in fourteen days results in empyæma.

9/5. Consumption occurs chiefly between the ages of 18 and 35.

38/7 and last. Those diseases that medicines do not cure are cured by the knife. Those that the knife does not cure are cured by fire. Those that fire does not cure must be considered incurable.

[To be continued.]