types I have taken, paralysis and convulsions, occur in a loss of function or a putting into activity those that were at rest. But there is a common element to the two forms. In both cases an irritation starts from the place of the disease. The difference begins in the distant part, and the character of the result depends upon the kind of cell implicated, whether there is loss of function, or an increase or morbid change of normal action.

I pass now to the other part of my subject, and shall begin to enter upon details elucidating certain facts. Let us first place our attention on the anterior lobes of the brain. One half of these lobes may frequently be destroyed by disease without the manifestation or appearance of paralysis. Now there are portions more posterior that have been considered as being connected with the memory, by that most eminent man Carpenter, among others, who grounds his views on experiments which show that the posterior lobes have no action when galvanized, and on the fact that they are more developed in man than in animals, and are developed in proportion to the intelligence. They are, therefore, looked upon as the seat of intellectual activity. The facts relative to the anterior lobes are different. The posterior lobes are certainly the most indifferent parts of the brain. Large as they are they seem to be less endowed with function, or at least with those functions we know of. There are functions that we do not know of, or are unconscious of, and as we must suppose that if a function exists there must be an organ to perform it, it may be that the posterior lobes are the seat of this power.

But to come back to what I was trying to establish. These lobes may be destroyed without causing any difference in the action of the rest of the brain. If we commence destroying the brain little by little we shall have to destroy a large portion before the activities described by Fritsch and Hitzig will be abrogated. The old experiments of Flourens, consisting of removal of the hemispheres, show that all the activities can go on. This has led me to admit that the real organization of nerve cells and fibres is not such as to correspond with the necessity of the existence of particular centers. The real organization is this: The cells which are employed in performing certain functions, as for instance, the power of expressing ideas by language, are not situated in one spot, but are scattered all over the brain, so that a great destruction of tissue can take place without the loss of the function. The whole of the third left frontal convolution, including the insula of Riel, that has been regarded as the seat of the power enabling us to express ideas in speech, may be destroyed without loss of this function. There is, therefore, the absolute necessity to admit that the function is more generally diffused, and belongs to more parts than this particular locality. This is a hypothesis which is in perfect harmony with all the facts of which we have any knowledge. It may at some future time be overthrown, but at present it is sufficient to explain all phenomena that occur.

The function of moving the right side of the body belongs to cells that are scattered on both sides of the brain, and one side may be sufficient to call into activity both sides of the body. Such is likewise the case with every other function of the brain. As regards the anterior lobes, we know that they can be carried away without important results, if they only contain a portion of the cells necessary to voluntary movements. In point of fact, both the anterior lobes have been entirely destroyed and no symptoms of paralysis resulted. We cannot, therefore, place these faculties where they have been located. The same thing holds true with regard to the power of expressing ideas by language, of moving the arm, and certain muscles of the face. If we go back further, to the middle lobes, we find that they can be destroyed without loss of power. If we take what relates to various other portions of the brain, as regards the power of producing convulsions we find the same facts to be true.

I have collected 187 cases of epilepsy due to tumors, and I am glad to say they were not my own cases but those of others, well described. In three cases only was the disease due to pressure on the corpora striata. These portions have, as I need not tell you again, been considered centers of motion. There were due to pressure on the corpus callosum two cases, anterior lobes ten, optic thalami fifteen, posterior lobes nine, and various other portions, the remainder, 148. This shows an immense variety of places in which the disease can be produced.

In most cases in which the membranes of the brain are diseased, you have convulsions, and there you have another argument against there being disease of the centers. This much as regards the meninges. In cases of hemorrhage, in 170 cases, in 37 there were convulsions, while they only appeared 19 times in cases of tumors of both corpora striata and optic thalami in 158 cases.

If we take again an examination of various parts of the brain we find corroborative evidence. In the base, convulsions or paralysis come on very rarely from disease of the parts just above the ventricles, if only the white tissue be diseased. Disease in the crura cerebri produces convulsions rarely, but paralysis frequently. This fact likewise militates strongly against the old theories. In six or seven cases where the crura cerebri were diseased, there was no appearance at all of paralysis or convulsions. In one case paralysis occurred on the same side as the disease in the crus.

IRON AND ITS CONSTITUENTS IN REGARD TO PHARMACEUTIC PREPARATIONS.

By HENRY G. DEBRUNNER, Chemist.

It may be deemed excusable for a Pittsburgher to entertain a very high opinion of iron, and if a Pittsburgh chemist particularly dwells on this subject it can hardly be taken amiss. When we consider that this element is one of the chief constituents of the earth's solid crust, varying in quantities from two to ten per cent. in the primary rocks, besides its general presence throughout the animal and vegetable kingdoms, a closer examination of its character will be justifiable. The manifold useful applications of iron in the arts and manufactures, its occurrence in numerous ores and minerals, in the green pigment of plants and the red one of blood; its presence even in the sun and the distance fixed stars, where it has been detected by aid of the spectroscopic, render it an article of universal interest.

When making ferruginous preparations, which are used in considerable quantities on account of their great therapeutic value, it is the aim of the pharmacist to procure the purest iron in the market. Chemically pure iron (Fe) is not an ordinary commercial article. The finest Pittsburgh tool steel, which fully equals, if not surpasses, the best of Sheffield make, contains, besides combined carbon, 0.05 per cent. of silicon, 0.008 per cent. of phosphorus, 0.006 per cent. of sulphur, 0.1 to 0.2 per cent. of manganese, and

minute traces of various other elements, while cast iron contains from 88 to 97 per cent. of pure Fe and a high percentage of manganese.

THE KINDS OF IRON USEFUL IN PHARMACY.

The Pharmacopœia recommends iron wire as material for iron preparations; musical wire, being steel and therefore purer, is also often applied and will yield sufficiently pure preparations. Their analyses are as follows:

	Iron wire.	Musical (steel) wire.
Carbon.....	0.2730 per cent.	0.5320 per cent.
Silicon.....	0.1418	0.0700
Phosphorus.....	0.0809	0.0427
Sulphur.....	0.0610	0.0182
Manganese.....	0.7027	0.0600
Copper, trace.....		
Iron (Fe).....	98.7406	99.2771
	100.0000	100.0000

(Quantity taken for analysis, 20 grams.)

The material I would recommend is soft steel drillings, they being cheaper, purer and not so difficult to dissolve as wire, which by the different mechanical processes of forging, hammering, rolling and final drawing has become denser and harder. The more impure an iron the quicker it will dissolve, but the same piece of iron or steel will more rapidly dissolve the less it has undergone the above-mentioned mechanical treatments. If we consider the immense amount of mechanical labor to which an iron or steel bar is subjected until its diameter is reduced to that of wire, it is evident that soft steel drillings, shavings or turnings deserve preference. Axles and steel boiler plate, of which turnings and drilling can easily be obtained at any steel work or machine shop, rank among the purest brands of iron, in the chemical sense of the word. Their composition is shown by the following analysis:

	Axle.	Boiler plate.
Carbon, combined....	0.2700 per cent.	0.3010 per cent.
Silicon.....	0.0800	0.0492
Phosphorus.....	0.0382	0.0298
Sulphur.....	0.0157	0.0163
Manganese.....	0.0747	0.0643
Iron (Fe).....	90.5124	90.5394
	100.0000	100.0000

(Quantity taken for analysis, 20 grams.)

It may be considered a practical rule that any brand of steel that will make good axle or boiler plate will also yield pure preparations on dissolving.

ACTION OF DIFFERENT ACIDS ON IRON.

Let us examine, now, what becomes of the different constituents of iron on dissolving it in different acids.

If iron is acted on by hydrochloric acid the following reaction will take place: $\text{Fe} + 2\text{HCl} = \text{FeCl}_2 + \text{H}_2$. Combined carbon is chiefly carried off in the form of a hydrocarbon, while the entire graphitic portion is left in the black insoluble residue. Iron phosphide is similarly decomposed, particularly on heating the solution, forming phosphoretted hydrogen. Silicon partially may undergo the same reaction, the larger quantity of this element, however, will be found in the black carbonaceous residue. Sulphur, if not combined with copper and arsenic, will be entirely eliminated as gaseous combinations, while manganese and iron remain in solution as chlorides. If copper is present among the impurities of iron, it will combine with the sulphur, forming copper sulphide, which will be found in the insoluble residue. Silicic acid from slag particles, pre-existing in the material used, may be detected in minute quantities, on oxidation and evaporation of the resulting solution to dryness, etc. If steel has been used, slag particles are absent. It is evident that from a pure iron these impurities are of no significance; when, however, pig iron or other impure brands are used, they may cause precipitates in a concentrated solution. Drillings of soft steel, containing 99 per cent. of iron (Fe), combine at the same time convenient shape with the highest practical purity. I have often had samples which dissolved perfectly in dilute hydrochloric acid without the application of heat. The product of this reaction is an aqueous solution of ferrous chloride, FeCl_2 , which is filtered, and finally converted into ferric chloride, FeCl_3 , by the addition of the necessary quantities of hydrochloric and nitric acids, when the following exchange of molecules will take place: $\text{FeCl}_2 + 2\text{HCl} + 2\text{HNO}_3 = \text{FeCl}_3 + 2\text{H}_2\text{O} + 2\text{H}_2\text{O}$.

The action of sulphuric acid on iron is similar to the foregoing, most of the impurities being carried off as gaseous combinations, while the graphitic carbon is left as a black insoluble residue, together with some silicon. Highly concentrated sulphuric acid hardly acts on iron in the cold; but on heating, sulphurous anhydride, SO_2 , is formed, while the dilute acid rapidly dissolves it to ferrous sulphate, liberating hydrogen.

The behavior of iron to nitric acid is essentially dependent on the concentration of the latter. Highly concentrated aqua fortis converts iron into its passive state, thus preventing any further reaction. When in this peculiar modification it will neither be acted on by weaker acid, unless touched with another clean piece of metallic iron, when liquefaction and evolution of gas will begin at once. Medium strong acid, of about 1.25 specific gravity, forms ferric nitrate, $\text{Fe}_2\text{N}_2\text{O}_8$, on evolution of nitric oxide, NO , which, in contact with atmospheric air, is oxidized to hypo-nitric anhydride, N_2O_4 , forming red fumes. Very dilute nitric acid, finally, when acting on iron in the cold, transforms it into ferrous nitrate, $\text{Fe}(\text{NO}_3)_2$, forming at the same time ammoniac nitrate by the action of nascent hydrogen on nitric oxide, NO , in presence of nitric acid. The latter gas (NO), if absorbed by the ferrous solution, produces a black coloration of the same. The formation of ammoniac nitrate takes place in accordance with the following equation:

The lower the temperature during this process, the larger the quantity of ammoniac nitrate formed. The different chemical processes which take place when iron is acted on by very dilute nitric acid are illustrated by the following scheme of equations:

These two reactions take place at the same time and are followed by the formation of ammoniac nitrate above alluded to. On adding five times the equation *a* to *b*, in the presence of an excess of 2HNO_3 , we obtain

thus expressing the different chemical reactions in one equation.

The nature of the reddish-brown flocculent body which is formed from the combined carbon is not yet sufficiently investigated. Its ability of producing lighter and darker colorations of the ferric solution, proportionately to its quantity, forms the basis of Eggertz's colorimetric method for its estimation in steel. The results agree to 0.02 per cent. with those obtained by combustion analysis.

On dissolving iron by means of iodine, the total quantity of carbon remains in the residue, the resulting solution containing but the iodides of the metallic elements, viz.: ferrous and manganous iodide, the latter in minute quantity. An excess of iodine, however, will also oxidize the non-metallic impurities, as phosphorus, sulphur, etc., by decomposing water and with the formation of hydriodic acid, HI . For the preparation of pure ferric iodide, FeI_3 , it is therefore essential to filter the solution of the green ferrous salt, FeI_2 , before adding a further quantity of iodine. As to the carbonaceous residue, it may be stated that it contains chemically combined iodine, and was found by Eggertz to have the following composition, when dried at 212°F .

Carbon, C.....	59.69 per cent.
Water, H_2O	22.50
Iodine, I.....	16.00

leaving, on ignition, some siliceous ash.

CURIOUS FACTS ABOUT TEMPERING.

It is really interesting to observe what an important influence carbon exerts upon the metal iron, the commercial brands of which should be, scientifically, called carburets of iron. "Spiegeleisen," a white crystallized and highly manganiferous cast iron, which is used in large quantities in the Bessemer process, corresponds to the formula Fe_3C ; it contains its total carbon (about 5 per cent.) in combined condition. In gray pig, the larger portion of this element exists in the graphitic modification, sometimes approximately corresponding to the formula $\text{Fe}_3\text{C}_2 + \text{C}_{\text{gr}}$. Among the numerous interesting phenomena which these combinations exhibit, I cannot help to mention one which, although being very frequently observed, still lacks a sufficient explanation of its causes. I refer to the process of hardening steel, as practised daily by every blacksmith. If a piece of steel at red heat is dipped into cold water an entire change of its structure takes place; its grain becomes finer and denser, its tensile strength almost double to what it was before, while its hardness nearly reaches that of diamond. Acids will hardly attack it in this state, no edge tool will produce an impression on the bar, which, before being subjected to this simple treatment, easily could be drilled or filed. These facts become still more interesting if we know that at the same time the volume of the bar has become larger and its specific gravity decreased. Salt water or mercury will produce a still higher degree of hardness and a larger expansion of the hardened bar, while a soap solution has no hardening effect on steel. None of these phenomena will take place in iron free from carbon, while hardness and tensile strength will proportionately increase with the latter, reaching their "practical maximum" at 1.2 per cent. combined C. This can by no means be called a mere physical change, but seems to be the result of a chemical reaction between the iron and its other constituents. I have previously mentioned that on dissolving iron in hydrochloric acid the combined carbon is carried off as carburetted hydrogen. If, for instance, the gases that form, on treatment of "Spiegeleisen" with the above acid, are allowed to pass through alcohol or concentrated sulphuric acid, part of them will be absorbed, and may be separated again, on dilution with water, in the form of an oily liquid which is colorless, possesses a strong, rather disagreeable smell, and consists chiefly of the hydrocarbons of the ethylen series, C_2H_4 . Besides these combinations, the characteristic group $\text{C}_{10}\text{H}_{16}$ of the volatile oils has also been found to be an admixture of the hydrogen gas liberated in this process. Resinous bodies, very probably products of decomposition of the foregoing compounds, are found in the carbonaceous or siliceous residue on dissolving, and may be extracted by ether or caustic alkalis. Sulphur and phosphorus also give rise to the formation of organic compounds containing these elements.

That the investigation of inorganic bodies may sometimes yield results allowing conclusions on the most complicated organic and physiological processes may be fairly illustrated by the following instance: As many physiologists admit the carbon, isolated from carbonic acid by the green parts of plants, under the influence of solar light, to be able, in its nascent state, to unite with water, forming a carbohydrate, it would be a strong support of this theory if a carbohydrate could be formed synthetically in the indicated manner and at a low temperature. That this primordial hydrate may form the basis of the numerous other compounds, elaborated by plants on ulterior transformation, is far easier to believe than the above hypothesis, without any experimental support. P. Schützenberger and A. Bourgois first expressed this idea in their "Researches on the Carbon in White Cast Iron," and succeeded in forming a compound, to which they gave the formula $\text{C}_{22}\text{H}_{30}\text{O}$. It can be constantly obtained by treating spiegeleisen, Fe_3C , with a cold solution of cupric chloride, when the following reaction will take place: $\text{Fe}_3\text{C} + 4\text{CuCl}_2 = 4\text{FeCl}_2 + \text{C} + \text{Cu}$. The carbonaceous residue of copper is then treated with cold ferric chloride, to which some hydrochloric acid has been added. Copper will rapidly dissolve, leaving a brownish-black but little bulky residue, which, dried at 212°F , corresponds to the above-mentioned formula, $\text{C}_{22}\text{H}_{30}\text{O} = \text{C}_{22}\text{H}_{30}\text{O}$.

DIALYSED IRON.—FERRUM DIALYSATUM.

May I be allowed to conclude this paper with a few remarks on ferrum dialysatum and its analysis? The demand for this new preparation, which doubtless will take the place of most of the other ferruginous compounds, chiefly on account of its almost entirely tastelessness, is continually increasing. A sample, which I prepared according to one of the methods lately published in this journal, gave on analysis:

Ferric oxide, Fe_2O_3	4.03	} 4.71
Ferric chloride, Fe_2Cl_6	0.69	
Water, H_2O	95.29	
		per cent.
		100.00

(Chlorine = 0.45 per cent. combined with 0.24 per cent. iron to form 0.69 per cent. Fe_2Cl_6 .)

It possessed all the characteristic properties of the commercial article, leaving on evaporation in the water bath 5.03 per cent. hydrated ferric oxychloride. The approximate chemical formula derived from the above analysis lets it appear as an aqueous solution of $\text{Fe}_2\text{Cl}_6 + 12\text{Fe}_2\text{O}_3$ or $\text{Fe}_{26}\text{O}_{36}\text{Cl}_6$. In order to obtain a very basic oxychloride I consider it necessary to keep the solution to be dialysed, during precipitation, or addition of the separately precipitated and washed ferric oxyhydrate, at as low a temperature as possible. Heating in an open vessel, as well as in hermetically sealed glass tubes, under pressure, will produce a precipitate insoluble on subsequent dialysis.

In order to test the percentage strength of dialysed iron, without evaporating a weighed quantity to dryness or determining ferric oxide and chlorine by weight or volumetric analysis, I would propose the following colorimetric method, which will give quite satisfactory results, particularly if applied to products that have been prepared by exactly the same process. Having obtained a clear, tasteless, dark-red solution, which will not precipitate on addition of silver nitrate,* it is removed from the dialyser, and compared with a standard solution of known strength, which has been determined by careful weight analysis. The *modus operandi* is as follows:

a. *The standard solution* consists of 10 cc. of dialysed iron (5 per cent.), diluted with distilled water of 60° F. to the volume of 200 cc. Twenty cc. of this solution are then introduced into a true cylindrical tube of 50 to 60 cc. capacity, graduated into 0.1 cc. In order to make the

B. *Colorimetric comparison*, 2 cc. of the solution to be tested are put into a similar tube of exactly the same dimensions, and diluted with distilled water until its shade is exactly the same as that of the standard. To produce a perfect mixture, the tube is shaken after every addition of water. If the standard solution has been prepared from dialysed iron, leaving exactly 5 cc. of residue on evaporation on the water bath, every cc. of the diluted solution of the sample to be compared will correspond to $\frac{1}{4}$ per cent. of residue of the original sample, and its volume expressed in cc., when of equal shade with the standard, divided by four, will give the percentage strength desired.

I have compared results of this colorimetric method with those of weight and volumetric analysis, and find it correct to 0.05 per cent. In the following I will give a few examples to illustrate the method proposed:

Standard: $\frac{20 \text{ cc.}}{4} = 5$ per cent. residue.

1. Sample compared was to be diluted to 18 cc. to equal shade of standard. $\frac{18 \text{ cc.}}{4} = 4\frac{1}{2}$ per cent. residue.

2. Sample compared was to be diluted to 23 cc. to equal shade of standard. $\frac{23 \text{ cc.}}{4} = 5\frac{3}{4}$ per cent. residue.

From these data, we easily can calculate to what volume any quantity of dialysed iron is to be evaporated or diluted to obtain the desired strength of 5 per cent.† As a mode of analysis only requires a few moments time, being at the same time sufficiently correct for practical purposes, it may be preferable to that of evaporation.

Black Diamond Steel Works, Pittsburgh, Oct. 6, 1877.

ON CHRONIC MALARIAL POISONING.

A CLINICAL LECTURE RECENTLY DELIVERED AT THE UNIVERSITY MEDICAL COLLEGE, NEW YORK

By ALFRED L. LOOMIS, M. D.,

Professor of Pathology and Practice of Medicine.

THIS patient, who states that he is 35 years old, says he has been sick since last April; that at that time, after an unusual exposure to wet and cold, he was taken suddenly with a severe pain in the right side, which compelled him to go to bed. He had a hacking cough with little or no expectoration; he was confined to his bed about two weeks before he expectorated anything after coughing, and then the sputa consisted of a "grayish slime." He was unable to leave his house for about six weeks. Since that time he has not felt well. Though his cough has not troubled him, and he has not lost much flesh, nevertheless he has felt weak and unable to work, being fatigued after slight exertion.

The first question that arises in connection with this history is, What was the nature of this attack? Pain coming on suddenly in one side always leads one to pleurisy. It is true that in pneumonia we have pain in the affected side, but not until the pleura becomes involved. In bronchitis, patients will have pain in the chest, but the pain is located behind the sternum. When pain in the chest is severe, and localized on one side, if you exclude chronic affections, such as intercostal neuralgia, pleurodynia, aneurism, and the like, you are led to pleurisy as its cause; without physical examination of the chest you will be unable to remove the doubt. We will, therefore, submit the chest of this patient to a physical examination before proceeding with his history. On inspection we do not notice much, except a slight shrinking on the right side. We perceive that the right clavicle is a little more prominent than the left. The chest, however, expands well and evenly on both sides. You notice that the right shoulder is a little lower than the left, but this is a very common occurrence, and usually depends on slight lateral curvature of the spine. Both scapulae move well, and there is not much difference between the motion on the two sides. Now the free movement of the scapulae, the absence of retraction on either side, and a free expansion of the chest on both sides, lead us to conclude that there is no extensive disease of the lungs or pleura. We can assert this from inspection alone. On palpation, we find the vocal fremitus to be feeble, but this may be due to the naturally high pitch of the patient's voice. The tones are not very sonorous, and this fact would account for the alteration from the ordinary fremitus. On comparing the two sides, we do not find any difference. On percussion, we find very fair resonance, both anteriorly and posteriorly, and little or no difference between the two sides. On auscultation the vesicular murmur is heard all over the

chest, though, perhaps, it is not quite as intense in the right infra-scapular region as in the left. There is a slight pleuritic friction sound also present in the right infra-scapular region. Now the question comes, Is it possible to have a pleuritic friction sound after so long a time has elapsed since the primary attack of pleurisy? This question must be answered in the affirmative, as we may often hear a pleuritic friction sound a year or more after the primary attack. The vesicular breathing is less intense on the right side, because there is probably some thickening of the pleura, and this thickening interferes with the free expansion of the pulmonary tissue in the vicinity. Except these two minor points, the physical examination is entirely negative.

Our physical examination of the chest, therefore, excludes any active or progressive disease of the lungs. Still this man is sick and unable to work. His pulse is weak, and, on counting, is found to vary from 120 to 130. Let us proceed, then, to a further investigation of his case.

On percussion over the liver, we find it to be of normal size. Over the spleen we find a considerably increased area of dullness. When we press firmly down over the abnormal area of dullness, we feel a solid mass much below the normal boundary of the spleen, and it gives the patient pain when we press firmly on it. This leads us to the conclusion that he has an enlarged and tender spleen.

The enlarged spleen starts us, then, in another direction, and we must go back and enter more fully into his history from another starting-point. He tells us that he lives on Long Island, near Flushing, and has lived there for nearly fourteen or fifteen years. This district, I need not tell you, is one of the worst in the vicinity of New York for the development of malarial diseases. The patient says he had a severe and prolonged attack of chills and fever three years ago, but has had no regular malarial paroxysms since.

We must conclude, I think, that the enlargement of the spleen is due to malarial infection; and a condition of chronic malarial infection would be ample cause for his weakness, inability to work, and disturbed circulation. As you notice, his surface is pale, and his face has somewhat of a yellowish hue. I think, then, we can now easily sum up his case: We have here a man suffering from a chronic malarial infection, a very common condition, and one which gives rise to a series of symptoms which cannot be enumerated or tabulated, so numerous and so various are they, and appearing under so many different forms. We may have neuralgias of various forms, that may or may not be periodical in their occurrence. We may have various dyspeptic symptoms, that cannot be relieved by the ordinary dyspeptic remedies; various forms of headache, that are often treated as grave forms of cerebral disease. In some there is confusion of mind, a staggering gait, loss of power in some portion of the body—the mental faculties may become impaired; I have known the subjects of chronic malarial poisoning, in the middle of an argument or speech, to suddenly lose the thread of their discourse, and go on talking for half an hour perfectly unconscious of what they were saying. Other persons are affected with a sort of inertia, which renders it impossible for them to do work of any kind. They are not sick enough to go to bed, but too ill and habitually tired to perform anything requiring the least exertion. Some, again, get short of breath, have a rapid, weak, irregular pulse, pass sleepless nights; and so I might go on for an hour, and still be unable to detail to you all the symptoms that chronic malarial infection may give rise to.

In all cases of chronic malarial infection we have important changes in the constitution of the blood. It contains free pigment, becomes thin, deficient in red globules, and no longer retains its normal, nutritive power. In consequence of this the whole system is affected, and we get secondary changes in all the organs, always, however, attended by primary enlargement of the spleen. In order that a person should become thus infected, it is not necessary that he should have distinct intermittent paroxysms. It is quite sufficient that he resides for a long time in a malarial district, as he is constantly exposed to the poison. If this patient were to move away from where he is at present living, to a place free from the malarial emanations, he probably would have two or three severe malarial paroxysms, after which it is far more amenable to treatment than now. Quinine or arsenic will not relieve him unless he can remove from the malarial district in which he now resides. Place him in a non-malarious locality, and then quinine will have its controlling power over the disease. Large doses of quinine will do more harm than good, so long as this patient remains in a malarious district. If the disease progresses without even temporary relief being obtained, splenic enlargement will increase, the liver will become involved, and finally general dropsy will terminate the case. The change of residence in this patient's case must be immediate.

This case, gentlemen, is very instructive, for it shows how we are sometimes compelled to arrive at a diagnosis by exclusion. —*Hospital Gazette*.

NERVOUSNESS.

THE number of people in the world who regard themselves as "nervous," in some form, is very large. A perfectly impassive, emotionless man or woman is a rarity; still, such do exist, and we hardly know whether to regard them as objects of envy or pity. Those without emotion, those who do not suffer at times from over-sensitiveness or excitement, are like rocks or trees: the winds of adversity may blow, a deluge of affliction may cover them; they remain calm and happy, the sleep is sound, the appetite unimpaired. Such are certainly enviable conditions, but the law of compensation is not annulled for the benefit of these favored ones.

Wherever we find them, we may be sure that we meet those devoid of the finer and more delicate instincts of human nature: those who are incapable of enjoying the beautiful things in the natural world or in art. They suffer less in the journey of life, but they also enjoy less. Like animated statues they live, without strong friendships or affections, without pity, without generosity; and nevertheless they die, with scarcely a pang. The world regards them with suspicion during life, and refuses to weep when they pass away. It is for wise reasons that but few of this class are permitted to make their advent into the world.

Since so large a proportion of the race is "nervous," it may be interesting to inquire briefly into the nature of nervousness, and the different degrees and peculiarities under which it exists.

The nerves, so called, are but prolongations of the brain matter which fills the cavity of the skull, and it is supposed that somehow the mind or soul is blended with or wrapped up in this peculiar form of matter; so that when from any cause it becomes abnormal, the soul or the sensations suffer and also become abnormal; as no two souls or sets of sensa-

tions are alike, so no two systems of nerves act alike. If everybody was in perfect health, there would be far less nervous suffering in the world, but still there would be sensitive nerves to trouble not a few. The duality of man all must admit; the soul is one thing, the body quite another. Every possible variety of spirits or souls animates every possible variety of physical bodies, and it is probable that the body is designed to fit or to be adapted to the peculiarities of individual souls. If a human organization were in a normal condition, the pervading essence or soul would work out its destiny, whatever that might be, in perfect harmony. It is not necessary to suppose that there would be perfect happiness or satisfaction in life in every individual instance, but the end for which individual life was created would be met. A great poet or painter has a vital constitution entirely different from that of a common laborer, and his nerves are influenced by causes and objects which make no impression upon the latter. His life is usually one of suffering, for great thoughts and capabilities both of the ideal and beautiful only come through pain. The body may be healthy, but the acute, sensitive, impressible nervous organization is itself the source of suffering manifested through the body. It is also capable of higher felicities and enjoyments, and these come through the physical organism.

A perfectly healthy body is usually tenanted by a healthy mind, but it may be coarse, wayward, mischievous, and may lead the body into such abnormal conditions as to shatter or destroy it. A healthy, well-poised mind in an unsound body cannot long sustain its normal state; it cannot perform its functions unimpeded, or without friction, and "nervousness" results. This means the machine is out of gear, and derangement of motion are the result. It may show itself in sleeplessness, or high excitability, or excessive fear, or strange apprehensions, or some form of monomania, or downright insanity. A naturally healthy mind cannot act normally in a weakened or diseased body any more than steam can move without jar or creak an imperfect or worn-out engine. The steam back of the engine is elastic and strong; knock away or destroy the imperfect machinery, and the perfect propelling force remains ready for any service that awaits it. It is of the highest importance, as we have stated in a former article, that the mind should be trained to take good care of the body, and thus prevent nervous derangements, which so torment us by morbid wakefulness or strange hallucinations.

Congenital weaknesses give rise to much nervous suffering. Many are born into the world with defective physical organizations, but with noble spirits; such are greatly to be pitied, but their cases are by no means hopeless. There are tens of thousands of most useful men and women who are heroically engaged in daily warfare with themselves. It is the tenant defending himself against the creaking, tottering, almost roofless house in which he lives. The nervous ones, made by physical defects, contrive to secure a considerable amount of happiness, and largely to influence the world for good. This is accomplished by a will power which in a measure dominates over bodily imperfections. This power can be cultivated and strengthened, and every nervous sufferer should strive to gain it, and never yield to despair. Fight out your destiny, rise superior to your weaknesses; this is the text from which sermons cannot be too often preached.

A nervous person exists in the world under great disadvantages. It is like being compelled to play a perfect tune with an imperfect instrument, or to row a boat against wind and tide. Life is fitful, capricious, and every step uncertain. One may be progressing pretty fairly to-day, but tomorrow the nervous currents are reversed, and thick darkness rests upon everything. This is applicable only to the intense forms of nervousness, such as are often met with. There is hope for even these: not that congenital infirmities, affecting the mind, can be wholly restored—that is not to be expected—but by clearly comprehending the situation, exercising the will power, and the best possible care of the imperfect body, life may be rendered in a large measure comfortable and useful. —*Boston Journal of Chemistry*.

THE HYGIENE OF THE HAIR.

PROFESSOR ERASMUS WILSON, who is probably the highest living authority on the subject, has lately given a course of lectures on the hair before the College of Surgeons in London. The following is an abstract:

Cleanliness is insisted upon as of prime importance, but washing the hair is emphatically condemned. Brushing is to be preferred, as it promotes circulation, removes scurf, and is in all respects a more effective stimulant than water. Cutting does not encourage growth as much as is commonly believed, but is advantageous in the case of the short, slender hairs generally called "young hairs."

CURES FOR BALDNESS.

Of the countless applications recommended for the cure of baldness few are ever successful, and in the occasional instances in which they appear to be useful it is possible that sequence is mistaken for consequence, the *post hoc* for the *propter hoc*. Most of these specifics are stimulants, not excepting petroleum, which has lately been eulogized. Croton oil, though excellent as a stimulant, is objectionable on account of the irritation it often causes and which sometimes extends to the eyelids and the face. Cantharides, though milder and more manageable, is likewise liable to give rise to inflammatory congestion and vesication, and sometimes to suppuration and ulceration. The skin may be peculiarly sensitive, or the remedy may have been employed too energetically, both as to quantity and time. Professor Wilson has seen several instances in which cantharidine has been absorbed into the system and has given rise to ischuria. As a rule, therefore, he rarely uses cantharides, and then always in a guarded manner. Certainly, it is not to be trusted to the acknowledged indiscretion of the public as a popular remedy. Acetic acid, or rather strong pyroligneous acid, he has discontinued for many years; but it is still a favorite, notwithstanding its strong and disagreeable odor.

Ammonia is Professor Wilson's favorite stimulant; it is unlikely to create inflammation and its consequences; it is neither absorbable into the system, nor could it do harm if such were the case; and its odor, refreshing at the moment of its use, speedily evaporates. In a case of ordinary madesia or falling out of the hair, he prescribes a lotion composed of strong liquor ammoniac, almond oil, and chloroform, of each one part, diluted with five parts of alcohol or spirits of rosemary, and made fragrant by the addition of a drachm of the essential oil of lemons. The lotion should be dabbed upon the skin of the head after thorough friction with the hair-brush. It may be diluted if necessary; it may be applied sparingly or abundantly; and it may be used daily or other wise.

There are cases in which a less stimulating and even a refrigerating lotion may be desired, and where an objection

*On addition of silver nitrate I have observed dichroism of said solution. It appears turbid in the reflected, but perfectly clear in transparent light.

†As to the necessary glass tubes I would recommend the same as used in the laboratories of steel works for colorimetric carbon determinations, viz.: Two true cylindrical tubes, closed at one end; capacity 50 to 60 cc., graduated into 0.1 cc., internal diameter about three-eighths of an inch; both exactly of the same dimensions and of best white glass.