the greater part of the water from the gelatinous stratum. The next step is to allow the plate to remain for five or six minutes in a cold mixture of one part of sulphuric acid with twelve parts of water, and in the mean time two parts of sodium fluoride are dissolved in one hundred parts of water, an ebonite tray being used. A volume of the dilute sulphuric acid equal to about one-fourth of the fluoride solution is next added from the first dish, and the plate is then transferred to the second dish, when the film soon becomes liberated. When this is the case, it is placed once more in the dilute sulphuric acid. After a few seconds it is rinsed in water, and laid on a sheet of waxed glass, complete contact being established by means of a squeegee, and the edges are clamped down by means of strips of wood held in position by American clips or string. All excess of sulphuric acid may now be removed by soaking the plate in methylated alcohol, after which it is dried. It is as well to add a few drops of ammonia to the last quantity of alcohol used.

The plate bearing the film negative is now placed in a warm locality, under which circumstances a few hours will suffice for the complete drying of the pellicular negative, after which it may be detached with the greatest ease by lifting the edges with the point of a penknife.—*Photo. News.*

NEW ANALOGY BETWEEN SOLIDS, LIQUIDS, AND GASES,

By W. SPRING.

THE author asks in the first place, What is the cause of the different specific gravities of one and the same metal according as it has been cast, rolled, drawn into wire, or hammered? Does the difference observed prove a real condensation of the matter under the action of pressure, or is it merely due to the expulsion by pressure of gases which have been occluded when the ingot was cast? According to well-known researches, metals such as platinum, gold, silver, and copper, which have been proved to occlude gases on fusion, and to let them escape, *incompletely*, on solidification, are precisely those which are most increased in their specific gravity by pressure. The author has submitted to pressures of about 20,000 atmospheres metals which possess this property, either not at all, or to a very trifling extent, and he finds that though a first pressure produces a slight permanent increase of density, its repetition makes little difference. Their density is found to have reached a maximum. Hence the density of solids, like that of liquids, is only really modified by temperature. Pressure effects no permanent condensation of solid bodies, except they are capable of assuming an allotropic condition of greater density. The author's former researches tend to show that solid matter, in suitable conditions of temperature, takes the state corresponding to the volume which it is compelled to occupy. Hence there is an analogy between the allotropic states of certain solids and the different states of aggregation of matter. Possibly the different forms of matter may be due to a single cause—polymerization. The limit of elasticity of a solid body is the critical moment when the matter begins to flow under the action of the pressure to which it is submitted, just as, *e. g.*, ice at or below 0° may be liquefied by strong pressure. A brittle body is simply one which does not possess the property of flowing under the action of pressure.

HYDROGEN AMALGAM.

HYDROGEN, although a gas, is recognized by chemists as a metal, and when combined with any solid metal—as in the case known to electricians as the polarization of a negative element,—the compound may correctly be termed an alloy; while any compound of hydrogen with the fluid metal mercury may with equal correctness be termed an amalgam of hydrogen, or "hydrogen amalgam." The efforts of many chemists and mining engineers have for many years been devoted to a search for some effective and economical means for preventing the "sickening" of mercury and its consequent "flooding" and loss. Some sixteen or more years ago, Professor Crookes, F.R.S., discovered and, after a series of experiments, patented the use of an amalgam of the metal sodium for this purpose. He made the amalgam in a concentrated form, and it was added in various proportions to the mercury used for gold amalgamation. Water becoming present, it will readily be understood that the sodium, in being converted into the hydrate (KHO) of that metal, caused a rapid evolution of hydrogen. The hydrogen thus evolved was the excess over a certain proportion which enters into combination with the mercury. While the mercury retained the charge of hydrogen, the "quickness" of the fluid metal was preserved; but upon the loss of the hydrogen the "quickness" ceased, and the mercury was acted upon by the injurious components contained in the ore.

Since the introduction of the sodium amalgam, many attempts have been made, more especially in America, to overcome the tendency of mercury to "sicken" and lose its "quickness." The greater number of these efforts have been made by the use of electricity as the active agent in attaining this end; but such efforts have been generally of a crude and unscientific character. Lately Mr. Barker, of the Electro-amalgamator Company, Limited, has introduced a system—already detailed in these pages—by which the mercury is "quickened." In his method the running water passing over the tables, or other apparatus of a similar character, is used as the electrolyte. In this arrangement, the mercury being the cathode, plates or wires of copper constituting anodes are brought into contact with the water passing over the mercury in each "riffle." Both the cathode and the anodes are, of course, maintained in contact with the poles of a suitable source of electrical supply. The current then passes from the copper anode through the running water to the mercury cathode, and so on to the negative pole of the electro-motor. As a consequence of this arrangement, hydrogen is evolved from the water, and has the effect of reducing any oxide or other detrimental compound of the metal; in other words, it "quickens" and prevents "sickening" of the fluid metal, and consequent "flooding" and loss. While the hydrogen is evolved at the cathode, oxygen enters into combination with the copper constituting the anodes. This to some extent impairs the conductivity of the circuit.

The latest process, however, is that of Mr. Bernard C. Molloy, M.P., which we have already characterized as highly scientific and effective, the production of a suitable amalgam being obtained under the most economical and simple conditions. This process has the advantage of producing not only a hydrogen amalgam, but also at will an amalgam of hydrogen combined with any metal electro-positive to this latter. Thus hydrogen potassium or hydrogen sodium can be obtained, as will be seen by the following description.

Mr. Molloy's effort appears to have been, in the first place, directed to a system which could be adapted to any existing apparatus, and in certain cases where water was scarce, to avoid altogether the use of that, in some districts, rare commodity. For the purpose of explanation we select an ordinary amalgamating table fitted with mercury riffles. The surface of the table is in no way interfered with or disturbed. The bed of the riffle, however, is constructed of some porous material, such as leather, non-resinous wood, or cement, which serves as the diaphragm upon which the mercury rests, and separates the fluid metal from the electrolyte beneath. Running the full length of the table is a thin layer of sand, supported and pressing against the diaphragm, and lying in this sand is the anode, formed preferably of lead. A peroxide of that metal is formed by the action of the currents, and may be readily reduced for use over and over again after working for from one to three months. The peroxide of lead, as is well known, is a conductor of electricity, and this fact constitutes an important advantage in the working of the process. The thin layer of sand is saturated with an electrolyte, such as dilute sulphuric acid ($H_2SO_4 + 20H_2O$) to give a simple hydrogen amalgam; ($Na_2SO_4 + xH_2O$) to give a hydrogen sodium amalgam; or ($K_2SO_4 + xH_2O$) to give a hydrogen potassium amalgam. Numerous other electrolytes constituted by acids, alkalies, and salts can be used to form an amalgam permanently maintained in a condition of "quickness" and freed from all liability to "sicken," whatever the components of the ore may be. The mercury is connected with the negative pole of the voltaic battery or other electro-motor, and the lead made with the positive pole of the same source. When the current passes there is formed according to the nature of the electrolyte, a hydrogen amalgam, or an amalgam of hydrogen with a metal electro-positive to hydrogen. The electrolyte, which, it will be understood, is distinct and apart from the body of water passing over the table, will last almost indefinitely, there being no consumption of any of its constituents, excepting hydrogen and oxygen from the water of solution. The quantity of acid or saline material contained in the electrolyte is so very small that there can be no difficulty in finding a supply in any district. The question of the supply of electricity is one which in many mining districts involves considerations of practical importance, since a large supply would necessitate water or steam power. It has been found that two cells having an electro-motive force of about two volts each will in this process suffice; if preferred, however, a very small dynamo machine can be used. In connection with the electro-motive force it is requisite to use, it may be observed that an amalgam of sodium containing only a small quantity of this metal would, when constituting a positive element in conjunction with a lead negative and on an aqueous electrolyte, give an opposing electro-motive force of less than three volts. Such an amalgam could therefore be obtained under an electro-motive force of about four volts. The electrical resistance in the circuit constituted by the apparatus being very small, no electrical power is wasted. When water constitutes the electrolyte, as in Barker's system, then the electro-motive force required to obtain a given current would be very much greater than that above specified. The conditions assured under this process appear to be all that can be required, while the amalgams obtained are those most calculated to preserve the "quickness" and prevent the "sickening" of the mercury.

Mr. Molloy has designed a special form of amalgamating machine to be used in conjunction with the above process, and with or without the aid of water. By the employment of this machine, each particle of the ore is slowly rolled in the quickened mercury for from fifteen to thirty or more seconds.

When the extent of the gold and silver mining industries is considered, and when it is borne in mind that a considerable percentage of the precious metal present in the ore is, in the ordinary process of extraction, lost through defective amalgamation—due to insufficient contact with the mercury or to a total absence of contact, as in the case of float gold—it is obvious that the introduction of any system obviating such loss is a matter of very great importance to those who are interested in the above mentioned industries. We expect shortly to hear of the practical introduction on a large scale of Mr. Molloy's process, and we look forward with interest to the results which may be obtained from it.—*The Engineer.*

TREATMENT OF ORES BY ELECTROLYSIS.

By M. KILIANI.

THE author lays down general principles for electrolytic metallurgy. Ores must be distinguished as good and bad conductors; the former may serve directly as anodes, and are easily oxidized by the electro-negative radicals formed at their contact, and dissolve readily in the electrolyte. The bad conductors have to be placed in contact with a conducting anode, formed of an inoxidizable substance, such as platinum, manganese peroxide, or coke. In laboratory experiments a good conducting ore is electrolyzed by suspension from a platinum wire in connection with the source of electricity, and is then immersed in the bath. On an industrial scale the ore, coarsely broken up, is placed in one of the compartments of a trough divided by a diaphragm.

On the fragments of the ore which extend up outside of the electrolytic bath is laid a plate of copper connected with the positive wire. Care must be taken that this plate does not plunge into the bath, otherwise the current would not traverse the ore at all. The cathode is preferably formed of the same metal which is to be obtained. The bath should not contain organic acids. In practice the common mineral acids are employed, or their salts, selecting by preference a salt of the metal which is to be isolated. It is convenient to pass the current through the greatest possible number of small decomposition troughs, taking care that the resistance in each is not too great. With a current of one and the same intensity we obtain in n troughs n times as much metal as in a single one. To keep down the resistance of the circuit we employ poles of a large surface, *i. e.*, plenty of ore and baths which are as good conductors as possible.

The state in which the metal is deposited at the negative pole depends on the secondary actions undergone by the electrolyte, and especially of the escape of gas. This is a function of the *density*, of the current, *i. e.*, the proportion of its intensity to the surface of the cathode. If the density is too great there is an escape of hydrogen, and the metal is deposited in a spongy condition. If the density of the current falls below a certain minimum, an oxide is deposited in place of metal. The electrolytic treatment of ores often renders it possible to separate the different metals which may be present. These are deposited in succession, and are sharply separated if the electromotive power is not too great.

1. *Zinc.*—The zinciferous compounds—calamine, blende, and zinc ash—are all poor conductors. They are first dissolved, and the salts obtained are electrolyzed, employing anodes of coke. Blende should be roasted before it is dissolved. The electrolytic bath should be as concentrated as possible to avoid sponginess of the metal and an escape of hydrogen. In a saturated solution the formation of hydrogen decreases as the density of the current augments.

2. *Lead.*—Galena is a good conductor, and may be directly electrolyzed. The best bath is a solution of lead nitrate. The arborescent crystallizations extend rapidly, and must be broken from time to time to prevent the formation of a metallic connection between the anode and the cathode. The sulphur of the galena falls to the bottom of the bath, and may be separated from the gangue by solution in carbon disulphide.

3. *Copper.*—Native copper sulphide, though a good conductor, cannot be directly electrolyzed on account of the presence of iron sulphide, whence iron would be deposited along with the copper. The copper pyrites are roasted, dissolved in dilute sulphuric acid, and the liquid thus obtained is submitted to electrolysis.

A PEOPLE WITHOUT CONSUMPTION, AND SOME ACCOUNT OF THEIR COUNTRY—THE CUMBERLAND TABLELAND.

By E. M. WRIGHT, M.D., Chattanooga, Tenn., Late Professor of Diseases of the Chest and State Medicine, Medical Department University of Tennessee; Late Member of the Tennessee State Board of Health, and ex-President of the Tennessee State Medical Society.

DURING the ten years that I have practiced medicine in the neighborhood of the Cumberland Tablelands, I have often heard it said that the people on the mountains never had consumption. Occasionally a traveling newspaper correspondent from the North found his way down through the Cumberland mountains, and wrote back filled with admiration for their grandeur, their climate, their healthfulness, and almost invariably stated that consumption was never known upon these mountains, excepting brought there by some person foreign to the soil, who, if he came soon enough, usually recovered. Similar information came to me in such a variety of ways and number of instances, that I determined some four years ago, when the attempt to get a State Board of Health organized was first discussed by a few medical men of our State, that I would make an investigation of this matter. These observations have extended over that whole time, and have been made with great care and as much accuracy as possible, and to my own astonishment and delight, I have become convinced that pulmonary consumption does not exist among the people native and resident to the Tablelands of the Cumberland Mountains.

In the performance of the work which has enabled me to arrive at this conclusion, I have had the generous assistance of more than twenty physicians, who have been many years in practice in the vicinity of these mountains. Their knowledge of the diseases which had occurred there extended over a period of more than forty years. Some of these physicians have reported the knowledge of the occurrence of deaths from consumption on the Tablelands, but when carefully inquired into they have invariably found that the person dying was not a native of the mountains, but a sojourner in search of health. In answer to the question: "How many cases of pulmonary consumption have you known to occur on Walden's Ridge, among the people native to the mountains?" eleven physicians say, "Not one." All of these have been engaged in practice there more than three years, four of them more than ten years, one of them more than twenty, and one of them more than forty years. All the physicians of whom inquiries have been made are now residents, or have been, of the valleys contiguous to Walden's Ridge, and know the mountain people well. Four other physicians in answer to the same question say, that they have known from one to four cases, numbering eleven in all, but had not ascertained whether five of them were born and raised on the mountains or not. The names and place of death of all these cases were given, and I have traced their history and found that but three of them were "natives," or had lived there more than five years, and that one of these was 57 years of age when she died, and had suffered from cancer for three years before her death. The two others died within six months after returning home from long service in the army, where both contracted their disease.

All these investigations have been made with more particular reference to that part of the Cumberland mountains known as Walden's Ridge than to the mountains as a whole. This ridge is of equal elevation and of very similar character to the main Cumberland range in the southern part of Tennessee, northwest Georgia, and northwest Alabama, and what is true of this particular part of the great Cumberland table is, in the main, true of the remainder.

Sequatchee Valley lies between Walden's Ridge and what is commonly known in that neighborhood as the Cumberland Mountains, and separates it from the main range for a distance of about one hundred miles, from the Tennessee River below Chattanooga to Grassy Cove, well up toward the center line of the State. Grassy Cove is a small basin valley, which was described to me there as a "sag in the mountains," just above the Sequatchee Valley proper. It is here that the Sequatchee River rises, and flowing under the belt of hills which unites the ridge and the main range, for two miles or more, rises again at the head of Sequatchee Valley. Above Grassy Cove the mountains unite and hold their union firmly on their way north as far as our State reaches.

Topographically considered as a whole, the Cumberland range has its southern terminus in Alabama, and its northern in Pennsylvania. It is almost wholly composed of coal-bearing rocks, resting on Devonian strata, which are visible in many places in the valleys.

But a small portion of the Cumberland lies above a plane of 2,000 feet. Walden's Ridge and Lookout Mountain vary in height from 2,000 to 2,500 feet.

North of Grassy Cove, after the ridges are united, the variation from 2,000 feet is but little throughout the remainder of the State, and the general character of the table changes but little. The great and important difference is in the climate, the winters being much more severe in these mountains in the northern part of the State than in the southern, and the summers much more liable to sudden changes of weather. Scott, Fentress, and Morgan counties comprise this portion of the table, and these have not been included in my examination, excepting as to general features.

In all our southern country, and I may say in our whole country, there is no other large extent of elevated territory

which offers mankind a pleasant living place, a comfortable climate—none too cold or too hot—and productive lands. We have east of the upper waters of the great Tennessee River, in our State, and in North Carolina and Georgia, the great Blue Ridge range of mountains, known as the Unaka, or Smoky, Chilhowee, Great and Little Frog, Nantahala, etc., all belonging to the same family of hills. This chain has the same general course as the Cumberlands. It is a much bolder range of mountains, but it is vastly less inhabitable, productive, or convenient of access. The winters there are severely cold, and the nights in summer are too cold and damp for health and comfort, as I know by personal experience of two summers on Nantahala River. But the trout fishing is beyond comparison, and that is one inducement of great value for a stout consumptive *who is a good fellow*. These mountains are much more broken up into branches, peaks, and spurs than the Cumberlands. They afford no table territory of any extent. There are some excellent places there for hot summer visits—Ashville, Warm Springs, Franklin, and others.

The Cumberland Mountains, as a whole, are flat, in broad level spaces, broken only by the "divides," or "gulfs," as they are called by the inhabitants, where the streams flow out into the valleys.

Walden's Ridge, of which we come now to speak particularly, is the best located of any part of the Cumberlands as a place for living. From the separation of this ridge from the main range of Grassy Cove to its southern terminus at the Tennessee River, it maintains a remarkably uniform character in every particular. From it access to commerce is easy, having the Tennessee River and the new (now building) Cincinnati Southern Railroad skirting its entire length on the east. It rises very abruptly from both the Tennessee and Sequatchee Valleys, being from 1,200 to 1,500 feet higher than the valleys on each side. Looking from below, on the Tennessee Valley side, the whole extent of the ridge appears securely walled in at the top by a continuous perpendicular wall of sandstone, from 100 to 200 feet high; and from the Sequatchee side the appearance is very similar, excepting that the wall is not so continuous, and of less height.

The top of the ridge is one level stretch of plain, broken only by the "gulfs" before mentioned and an occasional prominent sandstone wall or bowlder. The width on top is, I should judge, 6 or 7 miles. The soil is of uniform character, light, sandy, and less productive for the ordinary crops of the Tennessee farmer than the soil of the lowlands. The grape, apple, and potato grow to perfection, better than in the valleys, and are all never failing crops; so with rye and buckwheat. Corn grows well, very well in selected spots, and where the land is made rich by cultivation. The grasses are rich and luxuriant, even in the wild forests, and when cultivated, the appearance is that of the rich farms of the Ohio or Connecticut Rivers, only here they are green and growing the greater part of the year; so much so that sheep, and in the mild winters the young cattle, live by the wild grasses of the forests the whole year. The great stock raisers of the Sequatchee and Tennessee Valleys make this the summer pasture for their cattle, and drive them to their own farms and barns or to market in winter. The whole Cumberland table, with the exception of that small part which is under cultivation, is one great free, open pasture for all the cattle of the valleys. Thousands of cattle graze there whose owners never pay a dollar for pasturage or own an acre of the range, though, as a rule, most of the well-to-do stock farmers in the valleys own more or less mountain lands. These lands have, until quite recently, been begging purchasers at from 12½ to 25 cents per acre in large tracts of 10,000 acres and upward, and perhaps the same could be said of the present time, leaving out choice tracts and easily accessible places, which are held at from 50 cents to \$2 per acre, wooded virgin lands.

The forest growth of Walden's Ridge is almost entirely oak and chestnut. Hickory, perhaps, comes next in frequency, and pine after. There is but little undergrowth, and where the forests have never been molested there are but few small trees. This is due to the annual fires which occur every autumn, or some time in winter, almost without exception, and overrun the whole ridge. It does not rage like a prairie fire. Its progress is usually slow, the material consumed being only the dry forest leaves and grasses. The one thing essential to its progress is these dry leaves, hence it cannot march into the clearings. Nearly all the small shrubs are killed by these fires, otherwise they are harmless, and are greatly valued by the stock men for the help they render in the growth of the wild grasses. The free circulation of air through these great unbroken forests is certainly much facilitated by these fires, since they destroy every year what would soon become impediments. The destruction of this undergrowth leaves the woods open, and the lands are mainly so level that a carriage may be driven for miles, regardless of roads, through the forests in every direction.

The shrubs about the fields and places where the forests have been interrupted by civilization and other causes are blackberry, huckleberry, raspberry, sumac, and their usual neighbors, with the azalia, laurel, and rhododendron on the slopes and in the shade of the cliffs.

The kinds of wild grasses, I regret to say, I have not noted, and the same of the rich and varied display of wild flowers.

The whole ridge is well supplied with clean, soft running water, even in the driest of the season. There are no marshes, swamps, or bogs, no still water—not even a "puddle" for long—for the soil is of such a character, that surface water quickly filters away into the sands and mingles with the streams in the gulfs. Springs of mineral water are abundant everywhere. Probably there is not a square mile of Walden's Ridge which does not furnish chalybeate water abundantly. Sulphur springs with Epsom salts in combination are nearly as common.

The entire extent of Walden's Ridge is underlaid with veins of coal, and iron ore is plentiful, especially in the foot hills. The coal and iron are successfully mined in many places on the eastern slope; on the western they are nearly untouched for the want of transportation. I find that the impression prevails that the minerals of the Cumberlands are largely controlled by land agents and speculators. This is only true as applied to a very small part of the whole, not more than 1 per cent. The mineral ownership remains with the lands almost entirely.

The prevailing winds on Walden's Ridge are from the southwest; northerly and northeasterly are of rare occurrence. One old lady who had resided there for forty years, in answer to my query upon this subject, said: "Nine days out of ten, the year round, I can smell Alabama in the air." This was the usual testimony of the residents. Winds of great velocity never occur there. In summer there is always an evening breeze, commencing at 4 to 6 o'clock, and continuing until after sunrise the next morning. In times of rain,

clouds hang low over the ridge occasionally, but they never have fogs there.

The range of the thermometer is less on the Tablelands than in the adjacent valleys. I have had access to the carefully taken observations of the Lookout Mountain Educational Institute, such published accounts as have been made by Professor Safford, State Geologist, Mr. Killebrew, the thorough and painstaking private record of Captain John P. Long, of Chattanooga, and many more of less length of time. From all these I deduce the fact that the summer days are seven or eight degrees cooler on the mountains than in the Tennessee Valley at Chattanooga, and five or six degrees cooler than in the Sequatchee Valley, as far up as Dunlay and Pikeville. The nights on the table are cooler than in the lower lands by several more degrees than the days; how much I have thus far not been able to state. The late fall months, the winter, and early spring are not so much colder than the valleys as the summer months, the difference between the average temperature of the mountains and valleys being at that time four or five degrees less than in the summer. There is no record of so hot a day ever having occurred on the Cumberland Mountains as to cause mercury to run so high as 95° F., or so cold a day as to cause it to run so low as 10° below zero.

In the average winter the ground rarely freezes to a greater depth than 2 or 3 inches, and it remains frozen but a few days at a time. Ice has been known to form 8 inches thick, but in ordinary winters, 3 or 4 is the maximum. Snow falls every winter, more or less, and sometimes remains for a week. Old people have a remembrance of a foot of snow which lasted for a week.

Walden's Ridge has a total population of a little more than 4,000, scattered over 600 square miles of surface. The number of dwellings is about 800. Ninety per cent. of these are log houses; 70 per cent. of them are without glass windows; light being furnished through the doorways, always open in the daytime, the shuttered window openings, and the open spaces between the logs of the walls. Less than 2 per cent. of these houses have plastered walls or ceilings, and less than 5 per cent. have celled walls or ceilings. About 20 per cent. of them are fairly well chinked with clay between the logs, the remainder being but indifferently built in that particular. Fully 90 per cent. of these abodes admit of free access of air at all times of day and night, through the floors beneath as well as the walls and roof above. It is the custom of the people to guard against the coldest of days and nights by hanging bed clothes against the walls, and many good housewives have a supply of tidy drapery which they keep alone for this purpose.

Wood, always at hand, is the only fuel in use. The whole heating apparatus consists in one large open fireplace, built of stone, communicating with a large chimney outside the house at one end, and frequently scarcely as high as the one story building which supports it. This chimney is constructed in such a manner as to be a great ventilator of the whole room, quite sufficient, it would be thought, if there were no other means of ventilation. It is usually made of stone at the base, and that part above the fire is of sticks laid upon one another, cobhouse fashion, and plastered over inside and between with similar clay as that with which the house walls are chinked.

Very few of these houses are more than one story high. They are all covered with long split oak shingles—the people there call them "boards"—rusted from the trunks of selected trees. There is no sheathing on the roof beneath these shingles. They are nailed down upon the flat hewn poles running across the rafters, at convenient distances. Looking up through the many openings in the roof in one of these houses, one would think that this would be but poor protection against rain, but they rarely leak.

Not one family in fifty is provided with a cooking stove. They bake their bread in flat iron kettles, with iron covers, covered with hot coals and ashes. These they call ovens. The meat is fried, with only the exception of when accompanied by "turnip greens."

The question, "What is the principal food of the people who live on these mountains?" has been asked by me several hundred times. The almost invariable answer has been, "Corn bread, bacon, and coffee." Occasionally biscuits and game have been mentioned in the answers. All food is eaten hot. Coffee is usually an accompaniment of all three meals, and is drunk without cream and often without sugar. Some families eat beef and mutton for one or two of the colder months in the year on rare occasions, though beef is commonly considered "onft to go upon," as I was told upon several occasions, and mutton sustains less reputation. Chickens are used for food while they are young and tender enough to fry, on occasions of quarterly meetings, visits of "kinfolks" or the "preachers" and the traveling doctors. Fat young lambs are plenty in many settlements from March to October, and can be had at fifty cents each, but I could not learn that one was ever eaten.

A large majority of the adult population use tobacco in some shape—the men by chewing or smoking, the women by smoking or dipping snuff. They never have dyspepsia, nor do they ever get flesh, after they pass out of childhood, though nearly all the children are ruddy in appearance, and well rounded with fat.

One physical type prevails among the people in middle life, and carries along into old age but little change; and old age is common there. Nearly every house has its old man or old woman, or both. Everybody, father and mother, and frequently grandfather and grandmother, is still on hand, looking as brisk and moving about as lively as the newer generations. After they pass their forty years, they never seem to grow any older for the next twenty or thirty, and the grandfathers and grandmothers can scarcely be selected, by comparison, from their own children and grandchildren. The men are taller than the average, and the women, relatively, taller than the men. They are all thin featured, bright eyed, long haired, sharp looking people, with every appearance of strength and power of endurance.

I think the men who live on Walden's Ridge can safely challenge the world as walkers—aborigines and all; and unless the challenge should be accepted by their own women folks, I feel quite sure they would "win the boots." They go everywhere on foot, and never seem to tire.

Nearly all the people of the Tablelands are employed in the pursuits of agriculture. Very few of them seem to be hard workers. The men are all great lovers of the forest sports, much given to the good, reliable, old fashioned long rifles. The women and children are much employed in out door occupations, and live a great portion of their time in the open air. The clothing of all classes is scanty. The use of woolen fabrics for underwear has not yet been introduced, and coarse cotton domestic is the universal shirting, and cotton jeans, or cotton and wool mixed, constitute the staple for outer wearing apparel. The men wear shoes throughout the year much more commonly than boots. They never

wear gloves, mittens, scarfs, or overcoats, and they scorn umbrellas. Probably this whole 4,000 people do not possess two dozen umbrellas or twice as many overcoats. The women go about home with bare feet a great part of the summer. They never wear corsets or other lacing.

I have learned by careful inquiry that very few of the people of the Ridge have ever had the diseases of childhood. Scarlet fever I could hear of in but two places, and I suppose that not one person in fifty has had it. Whooping cough and measles have occurred but rarely, and the large majority have not yet experienced the realities of either. Very few people there have ever been vaccinated, nor has smallpox ever prevailed. Typhoid, typhus, and intermittent fevers are unknown. In the great rage of typhoid fever which took place ten or twelve years ago in the Tennessee and Sequatchee Valleys, not a single case occurred on the Mountains, as I have been informed by physicians who were engaged in practice in the neighborhood at the time. Diphtheria has never found a victim there; so of croup. Nobody has nasal catarrh there, and a cough or a cold is exceedingly rare.

I have said that these observations refer more particularly to Walden's Ridge than to the Cumberland Tablelands in our State as a whole. This ridge was chosen by me for this examination, mainly for the reason of its convenience, but partly owing to its being more generally settled than any other equal portion of the table which lies in Tennessee. Lookout Mountain is not as well located; it is on the wrong side of the Tennessee River, and but a few acres of it belong in this State. Sand Mountain is altogether out of the State, but it is perhaps nearer like Walden's Ridge in its physical features than Lookout. That part of the Cumberlands west of Sequatchee Valley is Walden's Ridge in duplicate, excepting that it is further west, and nearer the Middle Tennessee basin. There are some small towns, villages of miners, and summer resorts there, which interferes with that evenness of the distribution of population which Walden's Ridge has, rendering it more liable to visitations of epidemic and contagious diseases. The tablelands north of the center line of the State, above Grassy Cove, are very similar to Walden's Ridge, as far up as Kentucky, with the exception before mentioned—that of climate—it being from one to ten degrees colder in winter.

This whole Cumberland Table is no small country. It comprises territory enough to make a good sized State. At present, it is almost one great wilderness, in many particulars as unknown as the Black Hills. It is coming into the world now, and will be well known in a few years. The great city of Cincinnati has determined to build a railroad through the very center of this great table in the north part of the State, connecting with Chattanooga in the southern part. This road is nearly bored through, and in another year or two the Cumberland Tablelands in Tennessee will be much heard of at home and abroad.

It seems to me this country has merits. It is located in the latitude of mild climate; not so far south as to be scorched by the hot summer sun, or visited by the great life destroying epidemics; not so far north as to meet the severe and lengthened winters.

Climate, we know, is a fixture; it has a government; it has rules; the weather may change, but climate does not; it is a permanent out-door affair, and what is true of to-day was true centuries ago, and will be true forever, in the measure of any practical scope, at least. The people of the world are beginning to know that the greatest destroyer of human life has its remedy in climate.

Mr. Lombard, in his famous exhibit in relation to the prevalence of consumption among the people of different occupations, circumstances of life, and place of dwelling, gives the lowest number of deaths from this cause to those who live in the open air. He found the people who lived most in the open air, as would be readily conjectured, in the mild latitudes, not in the countries of hot sands or cold snows.

[The above article, in regard to which we have noticed frequent allusions in many of our exchanges, all erroneously attributing it to Dr. Wright, of Tennessee, and for which we have received repeated requests quite recently, was read by the lamented Dr. E. M. Wight at the 43d annual meeting of the Tennessee State Medical Society, held at Nashville, April 4, 5, and 6, 1876. Its distinguished and talented author will long be remembered as one of the most active, earnest, and zealous members of the State Society. At this meeting he also read a very admirable paper on "The Microscopic Appearance of the Blood in Syphilis," and prepared the report of the Committee on State Board of Health, to which report may be ascribed the honor of securing the necessary legislation organizing the Board. A true, upright, honest man, an earnest, devoted and zealous physician, universally esteemed and beloved by all who knew him; himself the subject of tuberculosis, dying in the prime of a brilliant manhood. He had but few equals in the glorious profession he honored and loved so well.]

From a careful reading of his paper, we find that he describes a large area of territory, free, absolutely free, from subsoil moisture, a climate mild and equable, a soil capable of producing nearly everything necessary for the comfortable maintenance of human life, surroundings that tempt, nay, compel the greatest possible amount of open air life. His description is exceedingly accurate of a plain, primitive, simple-minded people with but few wants, many of the virtues and few of the vices of humanity. With their surroundings, soil, climate, residence, and mode of living, need we be surprised that "there is a people," or a land "free from consumption"?—Ed.]—*Southern Practitioner*.

THE TREATMENT OF HABITUAL CONSTIPATION.

DR. F. P. ATKINSON thus writes in the *Practitioner*, January, 1884: I suppose there is no derangement of the system we are more frequently called upon to treat than habitual constipation; and though all kinds of medicines are suggested for its relief, they rarely produce more than temporary benefit—and it is difficult to see how the result can well be otherwise, while the root of the evil remains untouched. Now by far the more numerous subjects of this disorder are women; and as they do not seem to know that regularity is essential to the performance of every one of nature's operations, they appoint no stated times for trying to get the bowels relieved, but trust to receiving intimation when the rectal accumulation and distension can be borne no longer. This method of action may and does answer fairly well for a time; but nature gradually gets upset, the sensation of the lower bowel becomes blunted, and at last it ceases to respond to the ordinary stimulus. Then aperients are regularly resorted to, and although these act fairly well for a time, they gradually have to be increased in strength and frequency. Now, as regards the treatment, the first thing to be accomplished is of course to get the rectum well relieved; the next, to get the actions to take place at fixed times; and lastly,