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THE INDUSTRIAL SOUTH—TALLAPOOSA, GA.

Leaving Washington at 11 P. M., the traveler is due at Atlanta, Ga., at 10 the following night, making the run of 648 miles in less than 24 hours. The journey is over the Piedmont Air Line, a portion of the great Richmond and Danville system, heavy steel rails and

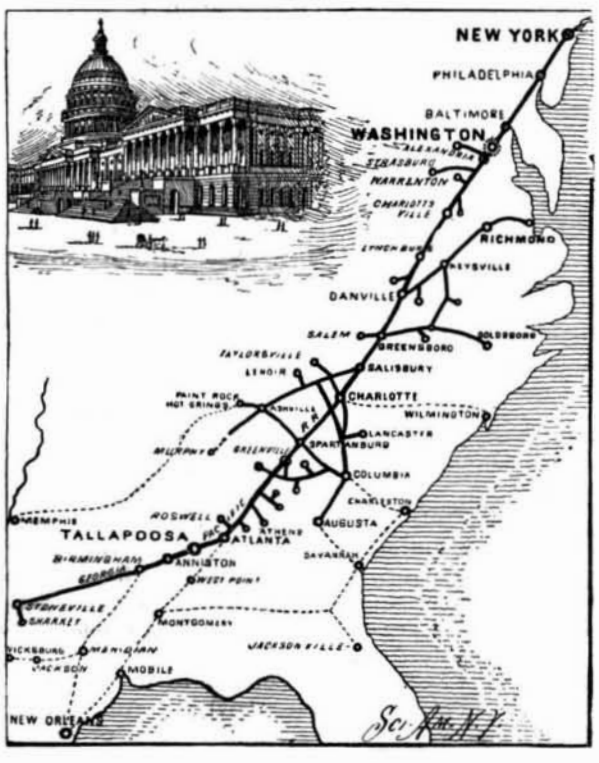

Fig. 1.—HOW TO REACH THE NEW SOUTH.

stone ballasted throughout. A correspondent of the SCIENTIFIC AMERICAN says: "To one who has never seen this section of our country, the trip is a revelation. Progress and improvement are everywhere indicated. Iron bridges have replaced the wooden. Between Atlanta, Ga., and Charlotte, N. C., the entire distance was covered at a rate exceeding 42 miles an hour. As shown by the accompanying map, many of the important places in the South, to which public attention is now attracted, are reached by this route.

"Tallapoosa, in the language of the Cherokee Indians, signifies 'Golden River,' and this name rightly belongs to the place. For ages the washings from the mountains have carried rich deposits of gold into the adjoining creeks flowing into the Tallapoosa River, and these deposits can be readily found with the miner's pan. Tallapoosa might be termed properly a mountain city, as it is located in the highlands of northern Georgia on the Piedmont plateau, 1,200 feet above the sea level. The land is not level, but rolling, and there is not a spot within the city limits or for miles around where water stands or becomes stagnant. This affords natural drainage, and half an hour after a heavy rain the surface water has disappeared and there is no mud. The river, a clear mountain stream, 2½ miles from the city proper and 100 feet below it, encircles it on the northwest and west sides, and this, with Walker's Creek on the east, thoroughly drains the entire place. The city is shaded with almost every variety of deciduous trees, such as oak, walnut, maple, holly, chestnut, wild cucumber, and magnolia.

Fig. 2.—TALLAPOOSA BLAST FURNACE—CAPACITY, 50 TONS A DAY.

"The climate of Tallapoosa, both for summer and winter residence, is unequaled. The average temperature in the summer of 1889 was 76 degrees, while but once did the thermometer reach 92 degrees. The nights during the summer are invariably cool, and it is the exception when a blanket is not needed."

Our correspondent continues: "We have made a careful investigation of the advantages of Tallapoosa, visiting it twice within the last three months, and have not been able to find any location that could compare with it in bracing air, clear water, and rolling ground, which gives natural drainage and adds so much to the landscape.

"The Georgia Pacific Railroad laid its tracks through the place in 1884, and in 1887 it had but 400 inhabitants, and these located in what is now called Oldtown, nearly a mile from the present center. In 1887, the Tallapoosa Land, Mining, and Manufacturing Co. secured 2,500 acres of desirable property in and surrounding the city and over 3,000 acres of mineral land adjacent, and commenced an extensive system of improvements and developments. Streets and avenues have been laid out and graded, and factories erected, until to-day Tallapoosa is one of the wonders of the new South. Active work in securing population from the North was not begun until about eighteen months ago, and the place in that time has grown from 700 to nearly 3,500, and the factories now in operation and approaching completion will require the employment of hundreds of additional people. The population of the city will be at least 5,000 by the end of the present year.

"The following record of the past eight months in locating new industries is remarkable, many of them being now in active operation:

	To employ.
Iron furnace	150 hands.
Cotton mill and bleachery	150 "
Edison electric light plant	10 "
Jeans and overall factory	50 "
Foundry and machine work	50 "
Soap factory	50 "
Cotton hosiery mills	125 "
Pressed brick works	25 "
Tallapoosa distillery	25 "
Glass works	100 "
Tallapoosa Cabinet Company	75 "
Tallapoosa Reclining Chair Company	75 "
Tallapoosa cigar factory	25 "
Tallapoosa Knitting Manufacturing Company	135 "
Tallapoosa Blacking Manufacturing Company	15 "
Tallapoosa bolting works	10 "
Tallapoosa city water works	10 "
	1 080

"Making a total of 1,080 hands that will be employed when all of the factories that are now in operation and are being built are running.

"The Tallapoosa furnace has a capacity of from 40

(*Continued on page* 345.)

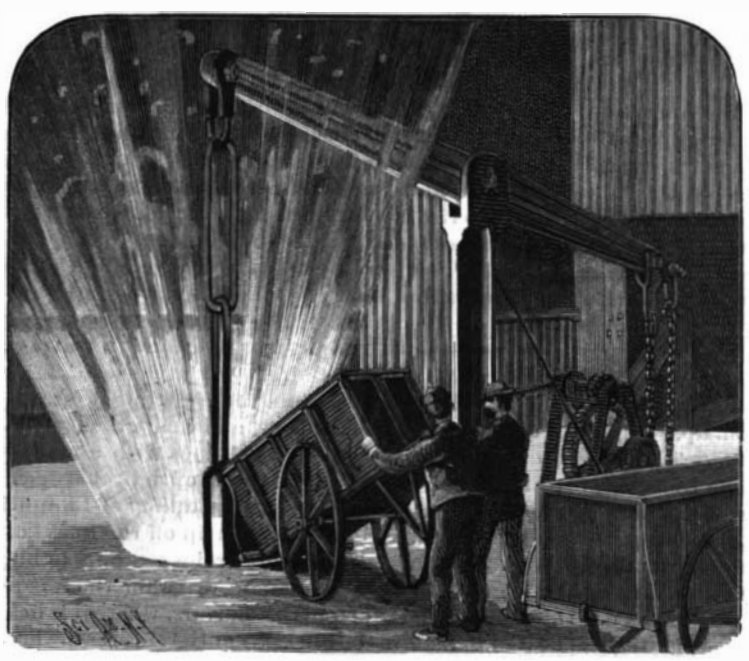

Fig. 3. TALLAPOOSA BLAST FURNACE—CHARGING THE FURNACE.

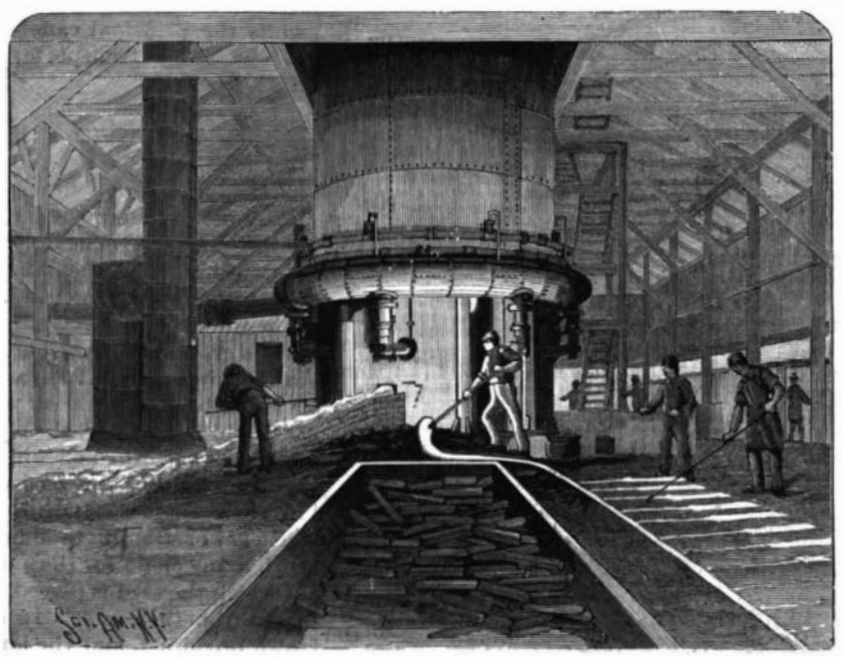

Fig. 4.—TALLAPOOSA BLAST FURNACE—MAKING A CAST.

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THE INDUSTRIAL SOUTH—TALLAPOOSA, GA.

(*Continued from first page.*)

to 50 tons of charcoal iron daily, employs at present about 75 men and receives the iron ore from Cedartown, Ga., Dansville, Ala., and intermediate points. Between 4,000 and 5,000 bushels of charcoal are used daily, and under the efficient management of J. A. Burns, pig iron is being shipped to Pittsburg, Pa., and after paying freight of $5 a ton, leaves a profit of $7 a ton, or over 50 per cent on the cost of manufacturing.

"The Mountain City Glass Works have been running less than three months, employ 100 hands, and are now turning out from 900 to 1,000 dozen flasks and bottles a day. Bottles are made in all sizes, holding from one-half ounce to one gallon. As might be imagined, flasks constitute an important part of the product. These are made in three sizes, half pint, pint, and quart, for the Southern trade. The sand used in the manufacture comes from Irondale, Ala., and the coal from Tennessee. As showing the way in which the Southern people encourage home industries, it might be mentioned that one Southern manufacturing company has given these works an order that will take the entire output for the next two years.

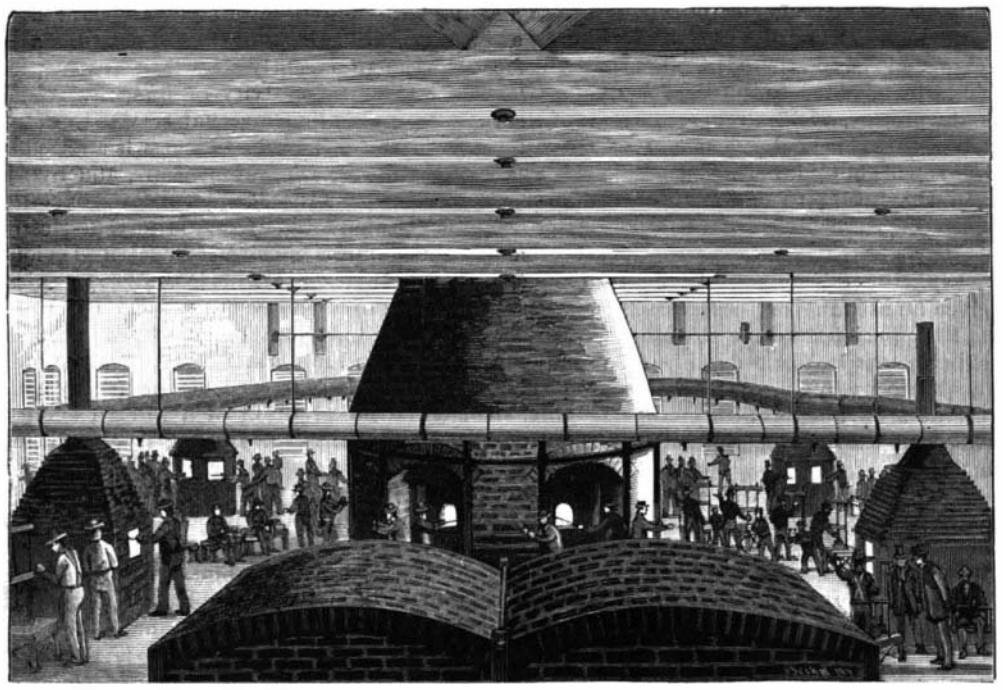

Fig. 5.—MOUNTAIN CITY GLASS WORKS—MAKING FLASKS AND BOTTLES.

"The Tallapoosa Knitting and Manufacturing Co. make seamless hose of medium grade for the Southern trade. Employ at present eighty hands, have capacity for 200. New hands are being added as fast as they can be taught. The output is now 200 dozen a day, with a full capacity of 600 dozen. The yarn used is procured from Macon, Ga., and whenever possible, the products of Southern mills are used. Finer grades of goods will soon be made.

"Contracts are about closed for the location of car works, bit and auger works, merino mills and several smaller industries. By the end of this year fully seven hundred additional hands will have to be employed at the various factories, and all of the skilled labor must come from the North and West.

"Wood and lumber are plentiful and cheap, hard cord wood being delivered for $1.50 per cord, and dressed hard pine timber that costs $18 per thousand in the North can be furnished here at $6 per thousand."

"We show in one of our illustrations one of the old style cottages that are found throughout the South, and also one of the new style that have been built by Northern people for homes for those that work in the iron furnace and glass works. This new house, which is only one of a large number already erected and inhabited, contains five rooms, besides pantry. It is well built, lathed and plastered, and, including outbuilding and well, was finished complete for $375. As such houses can be rented as fast as they can be erected, at ten dollars a month, it will be seen that an unusual chance for remunerative investment in building is afforded."

"The Blue Ridge Mountains extend from Virginia to Alabama and contain some of the most valuable mineral springs in the world. At no point in the whole range are they more plentiful or more varied in their medicinal properties than at Tallapoosa. Thousands of springs of pure free-stone water are found dotting the hillsides in all directions.

The new spring house just completed, which we illustrate, covers a remarkable locality. Three springs bubble here, the water of each being different to the taste, and the water from the fourth fountain, that of the Chalybeate Spring, is forced here by a hydraulic ram from the spring, which is overa mile distant. These springs have a wide reputation. The pale and anemic patient may take freely from the waters of the Chalybeate Spring with the assurance that the red corpuscles of the blood will be fully restored, while those suffering from renal diseases may hope to be greatly benefited by drinking daily from the more palatable waters of the Lithia Springs. These mineral waters are tonic in effect, and may be taken with beneficial results as a beverage by those in comparatively good health.

We give below the analysis of the Tallapoosa Chalybeate Spring water, made by Prof. John M. Candless, analytical chemist, of Atlanta, Ga.:

	Grains per Imperial gal.
Bicarbonate of soda	0·251
Bicarbonate of potash	0·848
Bicarbonate of magnesia	0·563
Bicarbonate of lime	0·846
Bicarbonate of lime	1·968
Bicarbonate of manganese	0·898
Sodium chloride	0·482
Sodium phosphate	0·044
Alumina	0·021
Silica	0·495
Organic matter and combined water lithia, traces	2·115
	8·531

In Fig. 8 we give a bird's eye view of Tallapoosa, showing the river, streets, and location of manufactories. We do not attempt to show the houses, but this cut will give a good idea of the way the city is laid out. Land on both sides of the railroad is reserved for factory sites, and these sites are given to parties who desire to locate industries here, and will not be sold to others.

The Tallapoosa Land, Mining, and Manufacturing Co., Tallapoosa, Ga., of which Ralph L. Spencer is manager, will be glad to give any additional information. Those who are contemplating a change of location will do well to investigate the many advantages which the Mountain City affords."

Fig. 7.—LITHIA SPRING HOUSE.

Fig. 6.—OLD AND NEW STYLE HOUSES—CRACKER TEAM.

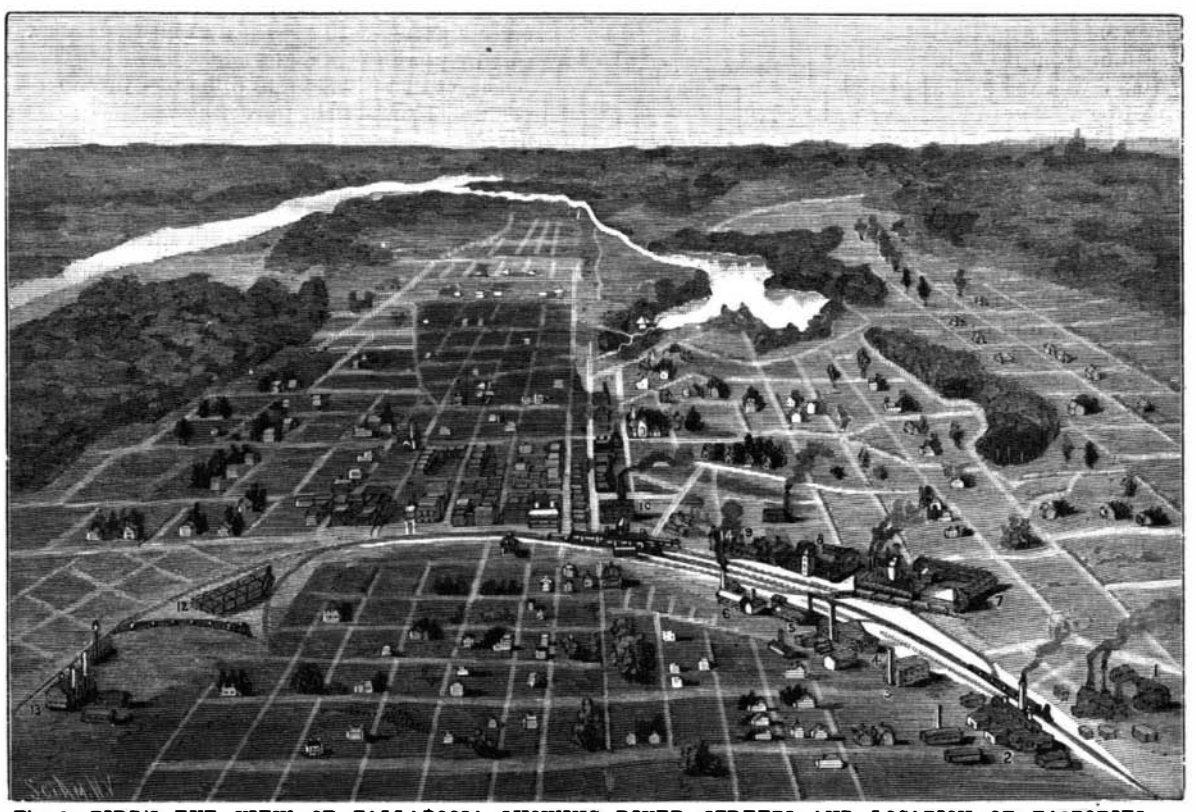

Fig. 8.—BIRD'S EYE VIEW OF TALLAPOOSA, SHOWING RIVER, STREETS, AND LOCATION OF FACTORIES.

1. Wagon factory. 2. Glass works. 3. Furniture factory. 4. Enterprise Cotton Co. 5. Poosa Mfg. Co. 6. Planing mill. 7. Tallapoosa Iron Works. 8. Chair factory. 9. Foundry and machine works. 10. Woodworking mill. 11. Jeans and overall factory. 12. Stock yards. 13. Soap works. 14. Hosiery mills.

Curious Railway Magnetism.

La Nature notes the following curious and interesting phenomena: Two railways, one the Sceaux line and the other the Ceinture, pass within a comparatively short distance of the Montsouris Observatory, Paris, the former line being about 80 meters distant and the latter but some 60 meters. During the passage of trains on the Ceinture line, which is nearest to the observatory, the bifilar magnet is found to be disturbed, and its oscillations are registered photographically; indeed, the movements are so regular that the curve clearly indicates the exact time of each train passing the observatory. This phenomenon is due to the fact that as the line crosses the direction of the magnetic meridian the wheel tires of the carriages become magnetized by induction, and so produce, in consequence of the laws of magnetism, a deviation of the bifilar magnet. The trains on the Sceaux line give rise to a phenomenon not less curious. Whenever the engine driver blows off steam, the electrometer is partly discharged, the electrical potential of the air falling to about one-half of its original value. These disturbances are brought forward by the director of the Paris Observatory in order to oppose the scheme which is now proposed of extending the railway from Sceaux to the Place de Medicis.

LARGE quantities of railroad ties are being shipped to the American market from Grand Falls, N. B. The price paid for them delivered at the seaboard is $13 per 100, a much higher figure than they formerly commanded. The supply to be obtained in that section is large and not likely to be soon exhausted.

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Does Anybody Live a Hundred Years?

It will be remembered that Sir George Cornewall Lewis undertook to prove that nobody had ever lived to be a hundred years old. He contended that the reputed centenarians were persons whose history was obscure and whose births could not be verified. No one, he maintained, who had lived before the public was included in the number.

Now, on the other hand, an English physician, Dr. George M. Humphrey, brings forward the results of an extensive and rigorous investigation, which has shown that the attainment of centenarianism is by no means impracticable, not less than seventy-four persons being enumerated who have unquestionably reached or exceeded the age of a hundred years.

Nothing, for instance, could be better authenticated than the longevity of the famous French savant Chevreul, who was more than a hundred and two years old when he died last year.

In 1875, Sir Duncan Gibb recorded the case of a great-aunt of a Mr. Williams, who had sat at the head of her own table for a hundred Christmas days, having been married at the age of fifteen.

We observe that Dr. Humphrey puts faith in the extraordinary age ascribed to Thomas Parr (one hundred and fifty-two years) on the ground that William Harvey, who performed the post mortem examination, would have taken pains to ascertain the truth had he had cause to suspect than an imposition had been practiced.

In the case, too, of John Bayles, said to have been one hundred and thirty years old when he died in 1706, there is extant a medical description, with details, that satisfied the observers of the correctness of the reputed age. Outside of England there have been trustworthy examples of centenarianism not mentioned by Dr. Humphrey.

When we bear in mind the fact that the bishops of the Greek church are even more careful to register births than are the English parochial clergy, we must accept, as deserving of credence, the statement made to Sir Henry Halford, by Baron Brunow, the Russian ambassador to the Court of St. James, that there is, on the borders of Siberia, a district where a year seldom passes in the course of which some person does not die at the age of one hundred and thirty. Then, again, from official accounts of deaths in the Russian empire in 1839, it appears that there were 858 persons whose ages ranged from 100 to 105; 130 ranging from 115 to 120; and three from 150 to 156. At Dantzic, one was said to have lived to one hundred and eighty-four, and in the next year, 1840, another died in Wallachia at the last mentioned age.

In ancient times, also, there are official records of centenarianism whose accuracy it is not easy to impeach. Thus, when Vespasian made his census in A. D. 74, there were found to be, in the Roman empire, fifty-nine persons who were just a century old; 114 who were from 100 to 110 years of age; two from 110 to 125; four from 125 to 130; three from 135 to 140.

Among the distinguished persons whose age there would be abundant means of verifying, may be mentioned Fabius Maximus, who died a centenarian; Terentia, the wife of Cicero, who, according to some, lived to be 103, according to others, 112; Claudia, the wife of the Senator Aurelius, who died at 115.

It is also to be noted that on the tenth anniversary of the taking of the Bastile, Bonaparte, then first consul, received two invalid soldiers, one of 106, the other of 107 years; and that, in 1822, Pietro Huel, who was then 117 years old, and the only Frenchman living who had seen Louis XIV., assisted at the inauguration of the statue of the Grand Monarch.—*New York Ledger.*

Bicarbonate of Soda for Carbonic Acid Gas.

A well known Liverpool firm of aerated water manufacturers states, as a result of their experience, that the use of bicarbonate of soda is far preferable to and very much cheaper than the whiting process, says *The Mineral Water Trades Recorder*. The firm has given much attention to the production of carbonic acid gas, which has hitherto been almost invariably made from carbonate of lime or whiting. As a result of perfectly reliable and frequently repeated experiments it has, however, been found that by the bicarbonate of soda process a cheaper and better carbonic acid gas is obtained—a gas chemically pure and rich, as is seen in champagne wine. The difference in quality of the two gases may be demonstrated by a simple experiment. Put some bicarbonate of soda in one glass and some whiting in another; pour into each a small quantity of water; add a few drops of sulphuric acid, when effervescence will at once take place and carbonic acid gas will be generated. On smelling at each in turn, it will be found that the gas in the vessel containing whiting emits an offensive smell, while that generated in the bicarbonate of soda will be found to be perfectly inodorous. The purity of the gas made from bicarbonate of soda tells in its favor as compared with that made from whiting. Then as to the cost, the firm in question have clearly demonstrated to our representative, when he called upon them, that the carbonic acid gas manufactured by means of bicarbonate of soda is not only beyond comparison purer, but it is also very much cheaper. Experiments have been made as to the cost of one ton of carbonic acid gas, the price of sulphuric acid being £6 per ton, of bicarbonate of soda £5 per ton, and of whiting £1 10s. per ton. By the bicarbonate process the cost would be £16 12s., made up of two tons of bicarbonate of soda and one ton two cwts. of sulphuric acid. By the whiting process the cost would be £22 10s., made up of three tons of whiting and three tons of sulphuric acid. The difference in favor of the former process is thus seen to be no less than £5 18s. per ton. In addition to this, by the bicarbonate process Glauber salts to the value of £4 19s. are obtained. Deducting the cost of manufacture and packing, £1 17s. 6d., there is a balance remaining of £2 16s. 6d., which, added to the difference in favor of bicarbonate process, £5 18s., represents a total saving for the ton of carbonic acid gas manufactured of £8 14s. 6d. This will, indeed, be a matter of great consideration in the future to mineral water manufacturers.

Fluorine.

We have already given an account of some experiments of M. Moissan that permitted him to isolate fluorine. In these experiments he succeeded in splitting up hydrofluoric acid into hydrogen and fluorine. Having again taken up this study, he has been enabled to determine the constant physical principles of this new simple gaseous matter.

M. Moissan, in the first place, studied the question as to under what conditions platinum is attacked by fluorine gas. He found that at the ordinary temperature it was possible to preserve fluorine indefinitely in platinum apparatus without any fear of the metal being attacked. Moreover, he demonstrates that at a temperature of 500° or 600° there forms a bifluoride of platinum analogous to the already known chloride of the same metal. This new compound is important, since it possesses the curious property of splitting up into fluorine and platinum through heat. It is likely that when it becomes possible to prepare fluoride of platinum by an indirect way (in starting from hydrofluoric acid, for example), we shall have a chemical process for obtaining fluorine in large quantity.

After his preliminary experiments, M. Moissan took the density of fluorine. In order to obtain this gas in abundance, he modified his first apparatus by giving a much greater capacity. Beyond the electrolyzing tube he arranged a small platinum spiral, designed to condense the vapors of hydrofluoric acid carried along, and, finally, two platinum tubes filled with fluoride of sodium. This compound, in fact, retains the minutest traces of hydrofluoric acid.

The pure gas thus prepared is led into the density bottle by means of small flexible platinum tubes. This bottle is first weighed when full of air, and afterward when full of fluorine. Knowing its volume, it is easy to determine the density of the fluorine therefrom. M. Moissan determined the figure 1·26, while the theoretical density is 1·31. The slight difference between these figures well shows that pure fluorine has a normal density.

M. Moissan next determined the color of the gas. For this he used a platinum tube closed by transparent plates of fluorspar. Two platinum ajutages allowed the gas to enter and make its exit. When the tube was well filled with fluorine, the gas, on escaping through one of the ajutages, ignited crystallized silicium at the ordinary temperature.

Observing the gas, then, through the plates of fluorspar, it was found that it had a greenish-yellow color, and that the latter was paler than that of chlorine seen in the same volume. The color, moreover, differs from that of chlorine, in inclining more to yellow.

The spectrum of fluorine also was studied in detail. Upon this subject there had been nothing published except a work by M. Salet, who had compared the spectra of chloride and fluoride of silicium. M. Moissan caused a very strong induction spark to pass between gold or platinum rods in a small apparatus filled with fluorine. It is unnecessary to add that this small apparatus was itself of platinum, and that the spark could be seen through the transparent fluorspar.

On comparing the results obtained by this new method with those furnished by hydrofluoric acid, fluoride of silicium, trifluoride of phosphorus, and fluoride of carbon, M. Moissan has been enabled to demonstrate the existence of thirteen new lines, placed in the red part of the spectrum. These lines are found for the most part in the red portion comprised between the second line of potassium and the line of lithium, that is to say, in a part where no simple body has hitherto given lines. Finally, M. Moissan adds that with hydrofluoric acid he has obtained several bands in the yellow and the violet; but the position of these bands, which are not very well defined and are very wide, could not be exactly determined.

Comparing these researches with those undertaken by M. Meslans upon the fluorate ethers of the ethyl series, it will be seen that fluorine is clearly placed at the head of the chlorine family. It is colored the same as all the compounds of this family, but not so deeply as chlorine. Its density is normal, and the fluorate ethers have a boiling point less by about 50° than the corresponding chlorate ethers.

What renders these researches very curious is not only the interest attached to the isolation of the new simple matter that has been obstinately sought for for a century, but the fact that this gas is the most active matter that chemists possess. In fact, it ignites crystallized silicium, which boiling nitric acid does not attack, and which pure oxygen burns with difficulty at a high temperature; and, while chlorine is incapable of directly combining with carbon, fluorine is capable of uniting with it and forming a gaseous body—fluoride of carbon, which M. Moissan will soon describe.

Another experiment recently described further demonstrates the chemical activity of fluorine. When into the tube filled with fluorine that served to determine the color of this gas a drop of water is allowed to fall, a decomposition of the water occurs, and hydrofluoric acid forms, with a disengagement of ozone—the latter being of the characteristic blue tint that Messrs. Hautefeuille and Chapuis have demonstrated to belong to oxygen very rich in ozone. This is the sole chemical reaction that yields so concentrated ozone.

Finally, we may add that fluorine and hydrogen combine when cold and in darkness. This is the only example of two simple gaseous matters directly combining without the intervention of a foreign energy. Chlorine and hydrogen require light; hydrogen and oxygen require an electric spark or a flame; hydrogen and fluorine combine directly.

Moreover, this chemical activity has been very well demonstrated by Messrs. Berthelot and Moissan, who have determined the heat of combination of hydrogen and fluorine to be 37·6 calories, that is to say, it is greater than that of the hydroacids for iodine, bromine, and chlorine. Thus the fluorine is the most active element known at present, and on account of this very property, we maintain that it will be called upon to furnish chemists the most interesting reactions.—*La Nature.*

The Red Scale.

The red scale is as dangerous and infectious to fruit interests as small pox is among human beings. If any one wants to know what an awful thing it is, let him come down in this vicinity and visit Orange. It is a pitiful sight to see what ruin has been caused by careless indifference of the people when this pest first came into this valley. When I first saw Orange, in the fall of 1884, I thought it the garden spot of America. I never shall forget the luxuriance of the acres of orange orchards and the prosperous-looking places. There were then shipments of many carloads of oranges from Orange station every spring, and there were dozens of men who got from $2,000 to $4,000 a year for their orange crops. The red scale came there in the spring of 1885. People talked some about it, and few said the pest would be serious unless stamped out at once. Their fears were ridiculed, and every one went on in an easy, indifferent way, while the little red scale bug multiplied, spread and devoured, till at last the people saw acre after acre of orange trees dead and dying. Go to Orange to-day. Where there were hundreds of fine orchards five years ago, the land is now covered with the decaying stumps of orange and lemon trees, while in the majority of cases barley and a few vegetables are now grown where the orange orchards used to flourish. The men who enjoyed an income of $2,000 and $4,000 annually from their orange crops are now as poor as church mice and are bewailing their fate. Come here some day and see for yourself what the awful red scale has done for us.—*T. M. Rolly, in Pomona Progress.*

Uses for Old Paper.

Most housekeepers know how invaluable newspapers are for packing away the winter clothing, the printing ink acting as a defiance to the stoutest moth, some housewives think, as successfully as camphor or tar paper. For this reason newspapers are invaluable under the carpet, laid over the regular carpet paper. The most valuable quality of newspapers in the kitchen, however, is their ability to keep out the air. It is well known that ice, completely enveloped in newspapers so that all air is shut out, will keep a longer time than under other conditions; and that a pitcher of ice water laid in a newspaper, with the ends of the paper twisted together to exclude the air, will remain all night in any summer room with scarcely any perceptible melting of the ice. These facts should be utilized oftener than they are in the care of the sick at night. In freezing ice cream, when the ice is scarce, pack the freezer only three-quarters full of ice and salt, and finish with newspapers, and the difference in the time of freezing and quality of the cream is not perceptible from the result where the freezer is packed full of ice. After removing the dasher, it is better to cork up the cream and cover it tightly with a packing of newspapers than to use more ice. The newspapers retain the cold already in the ice better than a packing of cracked ice and salt, which must have crevices to admit the air.

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