CARLISLE HERALD

SUPPLEMENT.

We issue with this number of our journal a supplemental sheet for the purpose of calling the attention of our readers to the works and products of the celebrated Philadelphia House of Harrison Brothers & Co., who have opened a Branch Office in New York, at No. 16 Burling Slip, S. E. corner of Water Street, and in Chicago, with Rockwood & Blocki, No. 192 Lake st. and No. 20 Wells st. The writer of this article has been privileged to visit their extensive works at Gray's Ferry and Kensington in Philadelphia, and from personal observation and *data* courteously furnished by the proprietors, has prepared this sketch, which we trust will be found interesting to the general reader, as well as to those concerned as dealers or consumers in the various important products of this firm.

It will not be inappropriate, before speaking of the Kensington and the Gray's Ferry Works, to make some brief mention of John Harrison, who built the Kensington Laboratory and founded the present house of Harrison Brothers & Co.

PREFATORY.

John Harrison having received a scientific education in this country, finished his studies under John Priestly, the celebrated chemist, in England. He was from the first much interested in practical chemistry, and was impressed with the belief that many products which we had always procured from abroad could be manufactured successfully here, and thus accomplish the two-fold advantage of rendering us less dependent upon Great Britian, and opening up a new and important source of national wealth.

Prominent among these, and of incalculable value in the arts, Sulphuric Acid or Oil Vitriol, which has been not inaptly termed the king of acids, arrested his attention; naturally, therefore, his first effort was in the production of this important article, and as early as 1793 he met with marked success. Looking back through the lengthening vista of years to the dim twilight of those remote days of American manufacture, we contemplate this enterprising pioneer advancing with no uncertain steps towards the assured success which his exertions merited, and we can appreciate in some measure the feelings with which his successors may be supposed to cherish his memory, and the satisfaction with which they may justly regard the substantial superstructure which has been reared upon a foundation so ample and secure.

In this connection we quote a short extract from a letter addressed in November, 1808, by John Harrison to his friend Thomas Jefferson, the President of the United States. At this time it will be seen that he was largely engaged in the manufacture of various chemicals at the Kensington Works, and the letter is extremely interesting, as it gives in his own words some sketch of his early career: "In the years 1793–4, I commenced a series of experiments for the preparation of Sulphuric, Nitric and Muriatic Acids on a practical scale. In this attempt I succeeded so far as to prepare them to the utmost perfection; but the high price of the raw materials, (Sulphur and Saltpetre) the want of sufficient demand, and the easy intercourse with Great Britian, from whence we obtained our supplies, occasioned me to abandon the undertaking, though at considerable loss; and from that time till 1804 I continued in my profession as chemist, content with preparing only such of them as were necessary for the supply of my immediate customers. At this period, believing the consumption of the United States to be sufficient for the support of the undertaking, I relinquished my business and devoted the whole of my attention to this important subject. In order to perform it with effect both capital and enterprise were requisite. I employed $5000 in the construction of apparatus alone, which, had I failed in my endeavors, would not have produced me $2000; but I succeeded. It became necessary, of course, to increase the works for the purpose of doing business on a large scale; because I could not expect the support of the venders or consumers of these articles unless I could give them assurances of my ability to supply all their wants. I consequently enlarged them to such an extent as I believe to be equal to the supply of the whole of the United States, as I have never yet had a demand for more than one-fourth of the quantity I am capable of producing. I have since added to my establishment the different preparations of Mercury, Antimony, Copper and many other articles of lesser consequence, and have employed as a capital $40,000."

From that time (1804) the work went on successfully. The Acid department, however, was once entirely destroyed (it was supposed by an incendiary,) but immediately rebuilt upon a larger scale. To the products already named was added, shortly afterwards, the corrosion on an extensive scale of White Lead, of which he was the second to manufacture in this country. Pyroligneous or Acetic Acid apparatus was next constructed, and from that time, either by him or his successors, Harrison Brothers, the works have been increased as fast as the trade demanded for the production of Colors, Red Lead, Litharge, White and Brown Sugar of Lead, Alum, Copperas, Acetate of Lime, and other chemicals.

We close this preface with extracts from Freedley's "Philadelphia," a work of standard excellence and authority, devoted to the interests of that city and its manufactures:

"The manufacture of chemicals in the United States may be said to date from the war of 1812. The commercial restrictions that preceded that war caused such a scarcity and dearness of chemicals that the preparation of the more prominent articles offered an attractive field for enterprise. Previous to that period, however, a Philadelphian had established successfully a manufactory of Sulphuric Acid; this was Mr. John Harrison, the first successful manufacturer of Oil Vitriol in the United States, and the founder of the well known house of Harrison Brothers & Co., the present proprietors of the 'Kensington' and 'Gray's Ferry' Chemical, White Lead and Color establishments. He had spent two years in Europe in acquainting himself, as far as he could gain access to them, with the processes used by chemists, and after his return to America devoted himself to the manufacture of chemicals. How much earlier he succeeded we have no means of ascertaining, but in 1806 he was fully established as a manufacturer of Oil Vitriol and other chemicals in Green Street above Third. So successful were these operations, that in 1807 he had built a leaden chamber 18 feet high and wide and 50 feet long, capable of making 3500 carboys per annum. The price which the acid then brought was 15 cents per pound. The first application of Platinum to the concentration of Sulphuric Acid was also first attempted in Philadelphia by Dr. Erick Bollman; he had brought from France the method then lately discovered by Dr. Wallaston for converting the crude grains into bars and sheets, and in 1813 he had reduced it into masses weighing upwards of 2 lbs., and into sheets more than 18 inches square. One of the first uses to which he applied these sheets was the making of a Platinum Still for *John Harrison* for the concentration of his Oil Vitriol. This early application of Platinum is highly creditable to the American manufacturer, as its use for this purpose was then a novelty in Europe."

Continuing our extracts from the above named work, we find at page 198 the following:

"Harrison Brothers & Co., established by John Harrison, to whom we have already referred, manufacture White Lead, Red Lead, Orange Mineral for Paper Stainers, and the Lead Chemicals generally, including White and Brown Sugar of Lead, &c., Oil Vitriol Alum, Copperas, Sulphates of Alumina and Copper, Pyroligneous, Acetic, Muriatic and Nitric Acids, Aqua Fortis, Wood Alcohol, and a full line of fine Colors in pulp, dry and in oil. The productions of this house have steadily gained in reputation and deservedly enjoy a high character for purity and excellence."

And again, page 216—

"Harrison Brothers & Co. have been manufacturers of White Lead since a very early period, and after Mr. Wetherill are the pioneers in its production in this country. On the completion of their Gray's Ferry Works, now rapidly approaching perfection, they will have the facilities for producing about 4000 tons per annum, which we believe exceeds the abilities of any establishment in this country or Europe. The productions at Gray's Ferry will be in addition to those made at Kensington. In connection with the Lead Works is the Color Department, where they manufacture extensively Vermilions, Carmines, Wood-lakes, Blues, Yellows, Greens, Dry Blacks, &c., &c. Private Telegraph Wires of this firm connect their two factories and office in Philadelphia with their office in New York, and the establishment of such between two cities for the uses of one enterprise is, we believe, without parallel in this or any other country."

KENSINGTON WHITE LEAD AND CHEMICAL WORKS.

We now proceed to give some account of the oldest of the two establishments of this firm, namely, the Kensington Works, and of the leading products which for three-quarters of a century have been here prepared, and which are recognized as standards in point of quality. We must premise, however, that our limits will admit only of a cursory sketch, touching upon the more salient points which met our observation while treading the numerous avenues intersecting the extended grounds of the Kensington enclosure, and passing through its series of buildings, the number and extent of which may be inferred from the fact that the aggregate roofage covers a total area of three and three-quarters acres.

WHITE LEAD WORKS.

The first step in the manufacture of Carbonate of Lead consists in melting pig lead (of that quality which is deemed the best for the production of White Lead) in a large cast iron boiler or kettle, firmly set in masonry. The melted metal, sluiced off through an aperture at the base, is fed by a trough into a series of iron moulds revolving on an endless chain; the lead is thus cast into the form of grates, technically called buckles, weighing about a pound each; and by means of this arrangement of revolving moulds as much can be done in an hour as in an entire day by the old method of casting by hand. These buckles, as they fall from the moulds, are transferred by an attendant to a heap at the further end of the foundry, to be conveyed thence to ranges of buildings called

STACKS OR BEDS,

occupying about the whole of the lower part of the yard, where may be found Lead in the various stages of corrosion, all tightly fastened up, and to be opened and emptied in turn, as the process of carbonization is perfected. Some account of the

CONSTRUCTION OF THE BEDS

may here be fitly introduced. These consist of frame structures, roofed in, and provided with double walls, the space between which is loaded with tan. In front of each a door rises the whole height of the stack, to facilitate the introduction of the materials, but which is closed by boards placed cross-wise as the several beds are erected. The method of putting in a bed is as follows:—A layer of tan is spread evenly upon the bottom. On this are placed strong earthen pots, which are about 10 to 12 inches deep, and say six inches in diameter at the top, each glazed within, and moderately tapering towards the base. Within these pots, at a sufficient height from the bottom, project ledges or nipples, upon which are tiered the buckles of lead. In each pot is deposited beneath these buckles about a pint of acetic acid of proper strength. Over the first tier of pots thus prepared boards are placed, and on these a layer of tan, followed by a second tier of pots, and this process is continued until the stack is filled, when it is tightly shut up and the chemical actions take place. At the end of a period varying from 10 to 14 weeks, the beds are opened, and the metallic Lead, transformed into a beautifully white Carbonate and much augmented in bulk, is taken to the

MILL HOUSE,

and passed through a long revolving screen, slightly inclined, through the meshes of which the Carbonate falls like snow into bins prepared for its reception; while the Blue Lead, which the beds had failed to convert into Carbonate, is discharged at the lower end into a separate bin. It were tedious minutely to follow the various succeeding manipulations, and we will merely remark that the Carbonate, after being ground in burr-stone mills, and floated through various rectangular cisterns for purposes of levigation, &c., is finally gathered and spread in the form of pulp upon immense drying-pans in the

KILN HOUSE.

Deprived here of its water, the product of these manifold processes assumes the shape of Pure Dry White Lead of Commerce. The process described above is known as the Dutch Method, and has been found to produce this invaluable pigment in its utmost perfection. Up to this time no pigment has been discovered to take the place of pure White Lead, and no mode of manufacture, except as above described, has produced a good and wearing paint. New and quick processes have been invented, but all have proved failures and of short life—the product pleasing the eye, but lacking body or opacity, and durability. The Carbonate slowly formed in beds is more finely divided and presents a larger number of particles in a given bulk than by any other method. Consumers who desire to guard themselves against disappointment should observe that the packages which they buy are branded with the name of Harrison Brothers & Co., or some other reputable corroder by the Dutch process. In some instances, however, the corroder will put up his brand at the request and under the name of a customer, and when the latter will select the best quality and is one in whom the consumer can have confidence, the prime qualities may be so bought. But the dealer will be extremely apt to select a grade solely with a view to profit, and such may be procured at lower prices than the pure article, being adulterated with barytes (worth two cents per pound), or zinc, (worth eight cents.) These fancy and cheap stuffs, too, are always burdened with a larger profit than the strictly pure brands, on which alone the corroder puts his name. Consumers will do well to bear these facts in mind.

ORANGE MINERAL.

To prepare this article in its utmost perfection the finest pulp White Lead is used and great care is observed in oxidizing and washing. It is first roasted for many hours in a reverberatory furnace. Then, after milling, it is thoroughly levigated and put back into the furnace in the form of pulp, where it remains till the requisite oxidation is reached. These are the leading features, but there are certain additional niceties of manipulation in the process which the limits of this sketch forbid us to describe minutely, and we will only remark that the aim is to produce an article that shall be impalpably fine and suitable for paper-stainers, and that the method pursued in its preparation is that so much in favor with the French—a method which is found to be far superior to the English or German.

ALUM.

The space occupied by these works is very large. At one end are the extensive sheds in which is stored the aluminous earth or clay. This is procured mostly from New Jersey. It is dried, and then ground and calcined in reverberatory furnaces. When thoroughly calcined and purified it is next, while hot, digested for some hours in immense vats of dilute Oil Vitriol. It is then washed with water, and concentrated—sulphate of ammonia having been previously introduced—in suitable apparatus. It is next washed again and freed from any remaining impurities, and being thus double refined and then boiled by steam in a Roching Kettle to a high degree of concentration, it is finally transferred to the crystallizing tubs. These are about eight feet high, and made of strong staves, which are so put together in sections as to be easily separated. At the end of eight or ten days, these sections being removed, a cylindrical mass of apparently solid alum is revealed. This being pierced near the bottom, the mother-water at the centre flows off along the sloping floor into vast leaden subterranean cisterns whence it is subsequently pumped and variously utilized. These "Pillars of Salt," or, rather, of Ammonia Alum, as the product is called in commerce (it will be perceived from this very cursory and imperfect sketch of its manufacture that the article may be more accurately termed a double sulphate of Alumina and Ammonia); these hollow cylinders of Alum, when pierced and cloft, are suffered to stand till the mother-liquor has wholly dried off, and are then broken up and barreled for the market. Each tub produces about twenty-one barrels. This article is largely used by Calico Printers in the preparation of the mordant for their dyes, (for which purpose freedom from iron is essential,) by paper and color makers, by tanners, &c., and in medicine.

A very ingenious and important use to which Alum has been put deserves special mention in this connection: we refer to the Alum and Dry Plaster Safes, made by Marvin & Co., at their extensive works in this city; a combination for which a patent has been secured. Dry Plaster is an excellent non-conductor of heat. Alum, which is broken up and mixed with the plaster in these safes, contains a very large per centage of water of crystallization, which is liberated at a temperature somewhat above 212°, and affords thus the most efficient protection to the contents of a safe that has ever been devised. About 25 to 30 barrels of Alum per week are used by Marvin & Co. in the manufacture of their safes.

COPPERAS OR SULPHATE OF IRON.

Contiguous to the Alum grounds stand the Copperas Works. Much of the Copperas found in the market is of inferior quality, being made from refuse liquors, such as the spent acid from coal oil refineries and other impure materials. The article produced at these works is made from iron turnings and shavings, acted upon by dilute Oil Vitriol; this solution is concentrated by evaporation and then transferred to a series of crystallizing tanks. Various grades of Copperas are here made, from the article for ordinary dyers' purposes to the better grades required for ink making and the refining of metals. The writer saw very fine specimens of Copperas here prepared for photographic purposes in beautiful green crystals.

RED LEAD AND LITHARGE.

Between the eastern range of White Lead Beds and the spacious Kiln House already referred to, where the pulp White Lead is dried, stands the building in which we find the apparatus for preparing Red Lead and Litharge. To make these oxides pig lead, selected from the product of the purest ores, is thrown upon the spacious hearth or bed of large reverberatory furnaces, of which there are four with capacity to produce over a ton a day in each. The Lead is melted by fires playing over it, and is kept constantly agitated to expose new surfaces to the air which imparts oxygen to the metal. (At the Gray's Ferry Works an improvement in the oxidizing of lead is in use, which will be described hereafter.) This operation is continued till nearly the whole of the lead is oxidized and a yellowish powder of oxide results, which is called Massicot. This is taken out, ground and washed, and during the process of levigation the oxidized particles being floated off from the blue or metallic lead which has escaped oxidation are put back as pulp into the furnaces, dried, and then pulverized in burr-stone mills. This product is Litharge. By subjecting the pulp to the action of the furnaces for a longer time it absorbs more oxygen, assumes a bright red hue, and is converted into Red Lead, which when properly powdered is ready for the market.

It is a specialty with this establishment to prepare these oxides for Potters' uses, and for Varnish, Glass and Rubber manufacturers. Their trade in these oxides is more extensive than that of any other firm in the country, and their brands readily command ½ to ½ cent per pound (and in some districts by a difference in freight, as high as one cent,) more than those of other makers. Each package is indorsed Potters, Varnish-makers, or Glass-makers, according to its quality. And these evidences of quality are not placed upon the packages, nor are the goods sent into the market under this "imprimatur" of Harrison Brothers & Co., until the following precautions have been taken. They buy only the best brands of Lead. Not satisfied with the trade reputation of these brands, they are carefully analyzed. If they pass a satisfactory examination they are then oxidized. To prevent even a possibility of error, a practical test is then made with Oil and Gums for Varnish, &c.; also on Earthenware or Biscuit, and with Glass in a retort. Having passed these tests, they are considered applicable for the uses specified and are so indorsed. The trades spoken of, therefore, may feel in using the Red Lead and Litharge, prepared by this firm, that they do so absolutely without risk, and with a certainty that their product, whether Flint Glass, Earthenware, Rubber or Varnish, will have proper justice done it.

It is a too prevalent custom with White Lead manufacturers, whose metal has escaped complete corrosion in the beds, to work up the Blue Lead which remains into Red Lead and Litharge. These refuse scraps may not be fit for such purposes, and consumers using products thus made expose themselves to serious risks. They are cheap at no price for consumption, unless accompanied by a written guaranty against damage. Harrison Brothers & Co., in common with other corroders, have these scraps over, it is true, but they are worked up into Pyrolignate, Acetate and Nitrate of Lead, and are never allowed to go into the departments where the "indorsed" brands are produced.

PYROLIGNATES.

A prominent feature at these Kensington Works is the department for the manufacture of Pyroligneous Acid, Acetate of Lime, Brown Sugar of Lead, &c. Pertaining to this department are large yard and wharf properties, where may always be found stored for distillation, 1500 to 2000 cords of hard wood. Across the area extends a long line of iron retorts, some of which (although repaired and renewed from time to time, until scarce a vestige, perhaps, of the original material remains,) have been in active use for over forty years. From 1000 to 2000 gallons Pyroligneous Acid are the daily product, together with some 500 bushels of charcoal. The latter is principally sold to be vended through the city.

These retorts are arranged in pairs and set in masonry, with furnaces beneath. They consist of long iron cylinders, three or four feet in diameter, which, when charged with wood, are securely closed with iron heads. From these retorts copper pipes proceed to conduct off the distillations, and condensation being effected by submerging these pipes in tanks of cool running water, they are discharged into a vat in the form of crude Pyroligneous Acid. This is elevated by pumping into cisterns, and allowed to settle. It subsequently passes through alembics and is converted into Acetate of Lime (from which Acetic Acid is distilled), or being conducted into the contiguous works is used in the manufacture of

BROWN SUGAR OF LEAD,

an article largely used in certain Varnishes, in Print Works, by Color Makers, and for other purposes. In its preparation, Litharge, placed in tubs, is saturated with Pyroligneous Acid. This solution is next boiled in large copper kettles. During ebullition any empyreumatic impurities that may appear are carefully removed. When reduced by evaporation to a crystalizing point, the liquid is poured into iron pans and set away to cool. It hardens in brown candy-like masses, which are broken up and packed in casks for the market.

COLOR MAKERS' SUGAR OF LEAD,

which breaks with a bright golden fracture, is prepared with greater care from distilled Acid, and during the final stages it is kept in a state of constant agitation. Much skill and experience are necessary in the preparation of these important Pyrolignates of Lead, and the products of this department of the works of Harrison Brothers & Co. always command a preference by reason of their superior excellence. This firm was the first, and for many years the only manufacturer of Pyrolignates of Lead in the United States. But in 1863, or thereabout, the demand exceeding their ability to supply promptly without neglecting products for which the demand was equally imperative, others entered the field, and now in this department there are several respectable competitors

Incidental to the distillation of wood is the preparation of

WOOD ALCOHOL OR NAPHTHA,

the capacious alembics and other apparatus for the distillation of which occupy the entire lower end of this apartment. Wood Alcohol (Methyl Spirits) is much used in lieu of grain Alcohol (Ethyl Spirits) by Varnish Manufacturers as a solvent for Shellac, also by Dyers for Aniline Colors, for which latter purpose it seems to be specially adapted, owing, as has been suggested, to a certain similarity of origin. In fact twenty parts are found to be equal as a solvent to thirty parts of alcohol, but it must be very pure and perfectly white. The article produced here is specially adapted to this end.

PAINT GRINDING DEPARTMENT.

In the second story of this section of the Works are placed the mixers, in which by machinery the White Lead is kneaded with a suitable quantity of pure Linseed Oil. When thoroughly mixed the pasty mass descends to the first story, where, after being finely ground through two mills, one of which empties into the other's hopper, it is discharged into tubs and is ready for packing. There are two tiers of these mills, (those in the upper being fed from the story above, and grinding into the lower,) having an aggregate capacity of seven to ten tons per day. Here are stacks of cans of all sizes, of metallic pails, and of wooden kegs, for receiving the White Lead. The wooden kegs are carefully protected by an interior coating of Shellac Varnish, which in a great measure prevents absorption of oil. The patent iron cans, however, which are used by this firm appear to be, as regards the quality of workmanship, strength and durability of material, exceedingly desirable, and the oil not being absorbed, as in the wooden kegs, paints of all kinds can be kept for years unimpaired; so strong are they, too, that shipments unprotected by packing may be safely made to any distance. We were much interested in observing the unerring celerity with which, by an exceedingly ingenious but simple machine, these metallic pails, when filled, were in the twinkling of an eye topped and securely sealed with strong tin lids.

PATENT RESOLVENT,

OR PAINT AND VARNISH REMOVER.

This article was invented and patented by Howard C. Kearny, and the patent and exclusive right to manufacture were purchased by Harrison Brothers & Co. It is prepared in a building adjoining the Brown Sugar of Lead Works, which is properly equipped with apparatus for making the necessary mixtures. This substance is in the form of a paste. It is easily applied and will remove the hardest and oldest paint from any surface in about thirty minutes, without scraping, and without injuring the wood or making it unfit to receive fresh paint. It will remove varnish from elaborately carved furniture and prepare it for oil. The cost of removing paint from old shutters, &c., by burning, is about twenty-five cents per foot, and the wood is apt to be damaged by charring; by this Resolvent, the work can be done in much less time and without the slightest possibility of damage to the wood, for three to four cents per foot.

We visited other departments which the limits of this article will not permit us to dwell upon. Glancing for a moment into the Boiler Room and inspecting the

STEAM ENGINE OF IMMENSE POWER

and admirable workmanship, the noiseless pulsations of whose Titanic arm, communicated by gear or belt, and speeding from shaft to shaft, are felt throughout these extended works, we returned to the office and were surprised to find that the better part of a day had been expended in an examination of this ancient establishment. We had no time to more than glance at the

EXPERIMENTAL LABORATORY,

which adjoins the office, but had the pleasure of a brief interview with the accomplished Analytical Chemist, whose skill is most valuable to the concern, and highly appreciated.

At one end of the office a door opens into an apartment where sits, amid relay, key and sounder,

THE TELEGRAPHIC OPERATOR.

While conversing with this gentleman an incident occurred which served as an illustration of the magnitude and manifold facilities of this concern. A message flashed over the firm's private wire from New York: "Can you ship us by propeller this P. M., three tons Pure Lead in oil, five casks Orange Mineral, and 2,000 lbs. Brown Sugar Lead. Answer immediately." The quick ear of the operator caught and his rapid pen received the message. Reference to the stock-book showed that the goods were on hand and in shipping order. An affirmative answer was promptly returned to the New York office, where the sales were effected and reported, necessary instructions were given to the shipping clerk, and presently heavy trucks, laden with the goods, filed past the office.

POSTSCRIPT.

The writer cannot conclude this hasty and imperfect sketch without adverting to one noticeable and interesting feature at these Kensington Works. He refers to the few venerable pensioners of the firm, who having spent the best years of their life in this establishment, and some of whom, we doubt not, well remember when its enterprising founder, John Harrison, first broke ground here and constructed his Leaden Acid Chambers; now at a ripe old age, "frosty but kindly," still sun themselves in these avenues as cherished stipendiaries, or may be seen bending with silver hairs over tasks which cheer but not fatigue their impaired activities, and serve to beguile the tedium inseparable to the decline of life.

CANTON CHEMICAL WORKS

CANTON, BALTIMORE, MD.

These Works have just been completed, and are for the manufacture of PYROLIGNEOUS ACID, CHARCOAL, ACETATES OF LIME AND SODA, WOOD ALCOHOL, RED AND IRON LIQUORS, &c., &c.

They cover an area of about one and a half to two acres, and will consume about thirty cords of wood per day. A description of like apparatus has already been given in our account of the *Kensington Laboratory*, in Philadelphia, under the head of PYROLIGNATES. These *Canton Works* produce the raw materials for many of the important Chemicals made at Gray's Ferry—such as Acetic Acid, Acetate of Lead, Varnish, besides increasing Harrison Brothers & Co.'s facilities in the manufacture of their Sylvan, Lisle and other Greens, Yellows, &c., and render them entirely independent of all foreign supplies of acetates.

We should think the establishment of these Works, too, in Baltimore, indicates an entire absence of sectional feeling with this firm, as it identifies their interests so closely with those of the South.

For many years, it is hoped, this factory will be a consumer for the landed proprietors and wood choppers of Virginia, North Carolina and Maryland; and, at the same time as it furnishes them a revenue from their timber it will serve to clear the land for its more important cultivation. We hope our Southern friends will take note of the establishment of the *Canton Chemical Works* at Baltimore, and show their appreciation of the fact by their patronage of Harrison Brothers & Co's manufactures.

TESTIMONIALS.

MILFORD, Oct. 4, 1869.

Messrs. Harrison Bros. & Co.

Gents:—Your Farmers' and Planters' Phosphate has done (for me) first rate in every respect; although the wheat was sowed very late it came out tip-top at harvest.

ALBERT SMITH.

Messrs. Harrison Bros. & Co.

Gents:—Your Farmers' and Planters' Phosphate, tried side by side with the best brands, has proved itself equal to any or all.

WM. P. BESWICK.

Messrs. Harrison Bros. & Co.

Gents:—I have tried your Farmers' and Planters' Phosphate, and consider it as good as any in the market.

ANDREW J. MALONE.

MILFORD, Sept. 28, 1869.

Messrs. Harrison Bros. & Co.

Gentlemen:—Your Farmers' and Planters' Phosphate, as sold by S. Jenkins, under a fair test has proved itself equal, if not superior to the very best brand sold in this section of the State.

NEHEMIAH BENNETT.

Messrs. Harrison Bros. & Co

Gentlemen:—Your Farmers' and Planters' Phosphate, as sold by S. Jenkins, has proved upon a fair and impartial trial, to be in every way superior upon corn to Pacific Guano, which costs $60 per ton. The corn was larger, greener, and the ears much finer, and for sorghum it excels everything.

G. H. BUSHANS.

MILFORD, Oct. 4, 1869.

Messrs. Harrison Bros. & Co.

GENTS:—Your Phosphate as sold by S. Jenkins, has proved upon a perfectly fair trial to be equal in every respect to the very best.

JOSHUA TALBERT.

Messrs. Harrison Bros. & Co.

Gents:—The Farmers' and Planters' Phosphate, upon a fair trial, has come out equal to the very best sold here.

DANIEL BURR.

Messrs. Harrison Bros. & Co.

Gents:—I tried three kinds of Phosphate last fall, viz: Crowsdale, Moro Phillips', and yours: at harvest your fertilizer was decidedly ahead. I also tried it on corn, and it did exceedingly well,—far better than Whan's.

Yours,

NATHANIEL HOLMES.

MILFORD, Sept. 5, 1869.

Messrs. Harrison Bros. & Co.

Gents:—We tried your Phosphate alongside of the best brands sold in the State, and pronounce it far ahead of them all; so much so that we shall want three more tons this fall.

GEO. W. HOMES.

Gentlemen:—I put about 200 pounds per acre of your Phosphate on Indian corn; the effect far exceeded my expectations; part of the field had none, and if it were possible it ought to have been ashamed of itself.

W. H. CARR.

Messrs. Harrison Bros. & Co.

Gents:—I have used your Farmers' and Planters' Phosphate alongside of standard fertilizers, and consider it equal to any of them.

CHARLES BARKER.

MILFORD, Oct. 7, 1869.

Messrs. Harrison Bros. & Co.

Gents:—I have used your Farmers' and Planters' Phosphate in the same field with Moro Phillips', on wheat, and found it equal in every respect.

Yours, truly,

R. L. BAKER.

Messrs. Harrison Bros. & Co.

Gents:—I have not only tried your Phosphate myself, but have seen it tried by others on wheat, corn and cane, and have no hesitation in pronouncing it a very superior fertilizer.

ROBERT W. BROWN.

Messrs. Harrison Bros. & Co.

Gentlemen:—I used some of your Phosphate last fall, and liked it so well that I want more.

JAMES H. HAMMOND.

Messrs. Harrison Bros. & Co.

Gentlemen:—I tried your Farmers' and Planters' Phosphate of Lime, on wheat, corn, and sorghum; on the corn and cane it acted splendidly, on wheat it was fully up to Moro Phillips'.

DAVID K. WATSON.

MILFORD, Oct. 8, 1869

Messrs. Harrison Bros. & Co.

Gentlemen:—I have used your Phosphate on wheat, rye, corn, oats, potatoes and sorghum. It has given very satisfactory results. It had an almost magical effect on corn, although it got less than 200 pounds per acre. 100 pounds per acre had a very striking effect on oats.

The sorghum was pronounced the best received at the molasses factory. The wheat and potatoes did well.

Yours,

S. JENKINS.

Messrs. Harrison Bros. & Co.

Dear Sirs:—I have given your Farmers' and Planters' Phosphate a fair trial, and can say positively that it is fully equal to Phillips', or any sold here.

Yours,

JOSHUA BENNETT.

Messrs. Harrison Bros. & Co.

Dear Sirs:—I tried your Farmers' and Planters' Super Phosphate of Lime alongside and can say conscientiously, that the wheat was fully if not a little better.

JOHN W. KIRBY.