PAPER MADE FROM WOOD.

In our last number we briefly noticed the wood paper works just started at Manayunk in Philadelphia. We regret very much that we were unable to accept the invitation of Messrs. Jessup & Moore to visit the works in company with the large number of gentlemen present on the 12th inst. The N. Y. *Times* supplies the following account of the process, which will read with interest:

The Manayunk Pulp Works, we were informed, were begun in August, 1864, and completed during the present month. The buildings are built of stone and brick, and occupy a space of about 1,000 feet in length by 350 in width, and cost over $500,000. The canal and river are close to them, and the Flat Rock Paper Mills make part of the establishment, which covers in the aggregate ten acres of ground. These are without doubt, the most extensive works of the kind in the world, and are capable of producing from twelve to fifteen tuns of paper pulp per diem, while the straw pulp produced by the Flat Rock Mills averages daily from 7,000 to 8,000 pounds. The works were projected by a company of gentlemen from different parts of the Union, and the subscribed capital is estimated at from ten to fifteen millions of dollars, and the investments, or active capital employed in the Wood Pulp Works and the Flat Rock Paper Mills, is between one and two million dollars. These works will increase the daily production of printing paper about 13,000 pounds, lessening to that extent the consumption of rags, thus diminishing the price of both. .

The present process for pulping wood was begun about the year 1850, by Mr. Hugh Burgess. Various improvements have at different times been made in the apparatus, until perfection may almost be said to be attained. The chief part of the process is a secret, but some idea of its wonderful nature can be given by a brief description. The wood which is to be made into pulp is taken into the chopping house, containing two choppers, capable of cutting each over 35 to 40 cords of wood every twenty-four hours. The wood is reduced in these choppers to little chips, which are received in cars and conveyed by an elevator to the boilers, ten in number, situate in a building 75 by 132 feet. These boilers can turn out 300,000 pounds in pulp (dried) in twenty-four hours. Here the chips are boiled in alkali for five or six hours, until the fibers are separated, when the mass, mixed with chemicals, is blown into vats below. The chemicals held in solution are then drawn from the pulp by water, and then the pulp is afterward taken out and bleached in the usual manner. When bleached it is put into a vat in the drying house, when, being diluted with water, it assumes the consistence of weak milk. From this vat it is conveyed through a pipe to a sort of tank, from which it is made to run over a revolving cylinder, and the water being drawn off, the pulp adheres to one side of the cylinder, from which it runs on a blanket to other cylinders, until it becomes dry enough to maintain consistency. It passes over thirteen cylinders before it is sufficiently dry to be cut into sheets. The sheets intended for bookmaking are sent to the mills at Wilmington, while those for newspapers are taken to the Flat Rock Mill adjoining, where they are mixed with straw material, in the proportion of eighty per cent of wood to twenty of straw, to give the requisite degree of softness and tenacity. It will be noticed that in the production of pulp no mechanical action is used, chemical means on by being employed.

In all these vast buildings nothing but the smoke that goes out from the chimneys is wasted. The liquid which runs off from the pulp is "recovered" in the round house, a building two hundred feet in diameter. Here are twelve furnaces, from which a blast is carried over the surface of the liquor, flowing in boilers below, which deprives it of its ligneous and other adulterations. The residue, with a due mixture of white ash, is again brought into requisition in the tanks. Whatever there is of residuum after these processes, is employed for manure. Adjoining the round house is an alkali storehouse and a mixing house, and kilns for the manufacture of marble lime required in the alkali department. At the north end is a settling pond to furnish clear water for the works. It is 300 feet square, 10 feet deep, and has a capacity of 5,500,000 gallons. All the mills are worked by water power. The consumption of wood for this establishment may be inferred from the fact that its stock of that necessity on hand at this time is about 15,000 cords. It employs comparatively few hands, most of the labor being done by machinery.

THE SOLAR SYSTEM.

The following catalogue has been compiled expressly for the SCIENTIFIC AMERICAN, and embraces all the members of the solar system known up to January 1, 1866, except those comets whose elliptical orbits have not been well ascertained. Although America was late in the field of astronomical research, she has shared with the old world the glory of some of the grandest discoveries in astronomy. We can claim a new ring and satellite to the planet Saturn, eleven planets, and upwards of twenty comets:

Name.	By whom and when discovered.	Period of revolution.
Mercury	The ancients.	88 days
Venus.	"	225 "
Earth	"	
Mars	"	1 yr 11 m
Ceres	Piazza, at Palermo, Jan. 1801.	4 yrs 7 m
Pallas	Olbers, Bremen, March 28, 1802.	4 yrs 7 m
Juno	Harding, Gottingen, Sept. 1, 1804.	4 yrs 4 m
Vesta	Olbers, Bremen, Dec. 29, 1807	3 yrs 7 m
Astrea	Hencke, Driessen, March 8, 1845.	4 yrs 1 m
Hebe	" " July 1, 1847.	3 yrs 9 m
Iris	Hind, London, Aug. 13, 1847.	3 yrs 8 m
Flora	" " Oct. 18, 1847.	3 yrs 3 m
Metis	Graham, Ireland, April 25, 1848.	3 yrs 8 m
Hygeia	DeGasparis, Naples, April 12, 1849.	5 yrs 7 m
Parthenope	" " May 11, 1850.	3 ys 10 m
Victoria	Hind, London, Sept. 13, 1850.	3 yrs 7 m
Egeria	DeGasparis, Naples, Nov. 2, 1850.	4 yrs 2 m
Irene	Hind, London, May 19, 1851.	4 yrs 2 m
Eunomia	DeGasparis, Naples, July 29, 1851.	4 y s 4 m
Psyche	" " Mar. 17, 1852.	5 yrs
Thetis	R. Luther, Bilk, Ger., Ap. 17, 1852.	3 ys 11 m
Melpomene	Hind, London, June 24, 1852.	3 yrs 6 m
Fortuna	" " Aug. 22, 1852.	3 yrs 9 m
Massilia	DeGasparis, Naples, Sept. 19, 1852.	3 yrs 8 m
Lutetia	Goldschmidt, Paris, Nov. 15, 1852.	3 ys 10 m
Calliope	Hind, London, Nov. 16. 1852.	5 yrs
Thalia	" " Dec. 15, 1852.	4 yrs 2 m
Themis	DeGasparis, Naples, April 5, 1853.	5 yrs 7 m
Phocea	Chacornac, Marseilles, Ap. 6, 1853.	3 yrs 8 m
Proserpine	R. Luther, Bilk, March 5, 1853.	4 yrs 4 m
Euterpe	Hind, London, March 8, 1853.	3 yrs 7 m
Bellona	R. Luther, Bilk, May 1, 1854.	4 yrs 7 m
Amphritite	Pogson, Oxford, Nov. 1, 1854.	4 yrs 1 m
Urnia	Hind, London, July 22, 1854.	3 yrs 7 m
Euphrosyne	Ferguson, Washington, Sept. 1, 54.	5 yrs 7 m
Pomona	Goldschmidt, Paris, Oct. 26, 1854.	4 yrs 2 m
Polhymnia	Chacornac, Paris, Oct. 28, 1854.	4 ys 10 m
Circe	" " April 6, 1855.	4 yrs 5 m
Lucothea	R. Luther, Bilk, April 19, 1855.	5 yrs 2 m
Atalanta	Goldschmidt, Paris, Oct. 5, 1855.	4 yrs 7 m
Fides	R. Luther, Bilk, Oct. 5, 1855.	4 yrs 4 m
Leda	Chacornac, Paris, Jan. 12, 1856.	4 yrs 6 m
Laetitia	" " Feb. 8, 1056.	4 yrs 7 m
Harmonia	Goldschmidt, Paris, March 1, 1856.	4 yrs 5 m
Daphne	" " May 22, 1856.	3 yrs 8 m
Isis	Pogson, Oxford, May 23, 1856.	3 yr 10 m
Ariadne	" " April 15, 1857.	3 yrs 2 m
Nysa	Goldschmidt, Paris, May 27, 1857.	3 ys 10 m
Eugenia	" " June 28, 1857.	4 yrs 6 m
Thestia	Pogson, Oxford, Aug. 16, 1857.	4 yrs
Aglia	R. Luther, Bilk, Sept. 15, 1857.	4 ys 11 m
Melett	Goldschmidt, Paris, Sept. 9, 1857.	
Doris	" " Sept. 19, 1857.	5 yrs 6 m
Pales	" " Sept. 19, 1857.	5 yrs 5 m
Virginia	Ferguson, Washington, Oct. 4, 1857.	4 yrs 4 m
Nemausa	Laurent, Nismes, Fr., Jan. 2, 1858.	3 yrs 8 m
Europa	Goldschmidt, Paris, Feb. 4, 1858.	5 yrs 6 m
Calypso	R. Luther, Bilk, April 4, 1858.	4 yrs 3 m
Alexandra	Goldschmidt, Paris, Sept. 11, 1858.	4 yrs 6 m
Pandora	Searle, Albany, Sept. 10, 1858.	4 yrs 7 m
Mnemosyne	R. Luther, Bilk, Sept 22, 1859.	5 yrs 7 m
Concordia	" " March 24, 1860.	4 yrs 5 m
Elpis	Chacornac, Paris, Sept. 12, 1860.	4 yrs 6 m
Danae	Goldschmidt, Paris. Sept. 9, 1860.	5 yrs 2 m
Echo	Ferguson, Washington, Sep. 14, 1860.	3 yrs 8 m
Erato	Lesser, Berlin, Sept. 14, 1860.	5 yrs 6 m
Ausonia	DeGasparis, Naples, Feb. 10, 1861.	3 yrs 8 m
Angelina	Tempel, Marseilles, March 4, 1861.	4 yrs 5 m
Cybele	" " March 8, 1861.	6 yrs 5 m
Maid	H. P. Tuttle, Cambridge, Apr 10, 1861.	4 yrs 4 m
Asia	Pogson, Madras, Ind., Apr. 17, 1861.	3 yrs 8 m
Leto	R. Luther, Bilk, April 29, 1861.	4 yrs 7 m
Hesperia	Schiaparelli, Milan, April 29, 1861.	5 yrs 7 m
Pomopea	Goldschmidt, Paris, May 8, 1861.	4 yrs 5 m
Niobe	R. Luther, Bilk, Aug. 13, 1861.	4 yrs 7 m
Feronia	Peters, Clinton, N.Y., Jan. 29, 1862.	4 yrs 5 m
Clytia	Tuttle, Cambridge, April. 7, 1862.	4 yrs 4 m
Galatea	Tempel, Marseilles, Aug. 30, 1862.	4 yrs 7 m
Euridice	Peters, Clinton, Sept. 22, 1862.	4 yrs 4 m
Freya	D'Arrest, Copenhagen, Oct. 23, 1862.	6 yrs 5 m
Frigga	Peters, Clinton, Nov. 12, 1862.	4 yrs 5 m
Diana	R. Luther, Bilk, March 15, 1863.	4 yrs 3 m
Eurynome	Watson, Ann Arbor. Sept. 14, 1863.	3 ys 10 m
Sappho	Pogson, Madras, May 3, 1864.	3 yrs 6 m
Terpsichore	Tempel, Marseilles, Sept. 30, 1864.	4 ys 10 m
Alcmene	R. Luther, Bilk, Nov. 27, 1864.	4 yrs 7 m
Beatrice	DeGasparis, Naples, Apr. 26, 1865.	3 yrs 9 m
Clio	R. Luther, Bilk, Aug. 25, 1865.	3 yrs 7 m
Io	Peters, Clinton, Sept. 19, 1865.	4 yrs 4 m
Jupiter	The ancients.	11 ys 9 m
Saturn	"	29 ys 5 m
Uranus	W. Herschel, Slough, Mar. 13, 1781.	84 y 10 m
*Neptune	Galle, Berlin, Sept. 23, 1846.	164 y 8 m

*Theoretically discovered by Le Verrier and Adams prior to this date.

PERIODICAL COMETS.

Name	By whom and when discovered.	Period of revolution.
Encke	Pons, Marseilles, Nov. 26, 1818.	3 yrs 4 m
DeVico	DeVico, Rome, Aug. 22, 1844.	5 yrs 5 m
Winneck	Winnecke, Bonne, March 8, 1858.	5 yrs 6 m
Brorsen	Brorsen, Kiel, Feb. 26, 1846	5 yrs 6 m
Biela	Biela, Josephstadt. Feb. 26, 1826.	6 yrs 6 m
D'Arrest	D'Arrest, Leipsic, June 27, 1851.	5 yrs 8 m
Faye	Faye, Paris, Nov. 22, 1843.	7 yrs 4 m
Tuttle	Tuttle, Cambridge, Ms., Jan. 4, 1858.	13 ys 7 m
Peters	Peters, Constantinople, June 26, '46.	12 ys 9 m
Halley		76 ys 3 m
Pons	Pons, Marseilles, July 20, 1812.	70 ys 8 m
Olbers	Olbers, Bremen. March 26, 1815.	73 y 11 m
Tuttle	Tuttle, Cambridge, July 18, 1862.	123 y 11m
Peters	Peters, Albany, N. Y. July 25, 1857.	258 yrs
Tebbutt	Tebbutt, Australia, May 13, 1861.	415 yrs
Bremiker	Bremiker, Berlin, Oct. 22, 1840.	344 yrs
Donati	Donati, Florence, June 2, 1858.	1875 yrs

SATELLITES.

Earth.

Moon	The ancients.

Jupiter.

1 Io	Galileo, Padua, Jan. 7, 1610.
2 Europa	" " " "
3 Ganymede	" " " "
4 Calisto	" " " 13, "

Saturn.

1 Mimas	W. Herschel, Slough, Sept. 17, 1789.
2 Engeladns	" " Aug. 28, 1789.
3 Tethys	Cassini, Paris, March, 1684.
4 Dione	" " " "
5 Rhea	" " Dec. 23, 1672.
6 Titan	Huygens, Hague, March 25, 1655.
7 Hyperion	G. P. Bond, Cambridge, Sept. 16, 1848.
8 Japetus	Cassini, Paris, Oct. 25, 1671.

Uranus.

1 Ariel	Lassell, Liverpool, Sept. 14, 1847.
2 Umbriel	W. Herschel, Slough, Jan. 18, 1790.
3 Titania	" " " 1787.
4 Oberon	" " " "

Neptune.

Not named	Lassell, Liverpool, Oct. 10, 1846.

Rings of Saturn.

1 Bright ring	Galileo, Pisa, Nov. 12, 1610.
*2 Dusky "	G. P. Bond, Cambridge, Nov. 11, 1850.

*C. W. Tuttle, assistant at the Cambridge Observatory, first suggested, in 850, an interior dusky ring as a true explanation of the phenomenon discovered by Bond.

Schonbein on Ozone.

The rumor which you helped to spread abroad that Schonbein has succeeded in isolating ozone and antozone, attracted, it seems, the notice of the Scientific Association of France, and that learned body invited Schonbein to come to Paris and exhibit his experiments to the wondering gaze of Parisian savans. Schonbein's reply gives us the exact state of his knowledge or belief on the subject, and is worth communicating to English chemists. He says that he has been engaged almost exclusively, and without interruption, in the study of oxygen for thirty years, and during this time he has discovered a number of facts which allow of his drawing the following conclusions:—1. That oxygen may exist in three different allotropic states; 2. Two of these states are active, and opposed one to the other—he designates one of them ozone, and the other antozone; 3. Equal quantities of ozone and antozone neutralize each other to form ordinary neutral or inactive oxygen; and, 4. Ordinary neutral oxygen may be split up or transformed, half into ozone and half into antozone. The experimental demonstration of the truth of these conclusions, however, he admits, is not so simple—as for example, the composition and decomposition of water; and he adds that the experiments necessary for their logical deduction would occupy more time than could be devoted to a single lecture. "Some scientific journals," says Schonbein, "have been badly informed when they asserted that I had succeeded in isolating ozone and antozone in a state of purity. The assertion is without foundation. It is true that for a long time I have made a great number of attempts to arrive at this desirable end, but always without complete success. Ozone and antozone are always mixed with neutral oxygen from causes closely associated with the generation of the two active modifications." The Professor concludes his letter by offering to come to Paris, should it still be desired, and if his health permit, and give a short course illustrative of the whole subject. It is to be hoped he will be invited, and while here, perhaps he might be induced to go on to London, which I do not think he has visited since the year he announced his discovery of ozone.—*Paris Correspondent of Chemical News.*

DR. EBRARD observes that an adult leech, gorged with blood, requires nearly eighteen months in a state of captivity for the process of digestion. Young and free specimens require six weeks or two months.