Scientific Museum.

[For the Scientific American.]

Meteorological Calculations.

The following table of meteorological calculations is made for the months of April, May, and June, 1854—showing the time of passage of atmospheric influences, and also their average velocity of movement in miles per day; being a continuation of a similar series of calculations from page 144 of your present volume:—

Time of passage.	Velocity of movement.	Classificat'n of influence.
April 3, 3 A. M.	673	1
" 3, 12 M.	882	5
" 17, 10 A. M.	884	5
" 22, 12 M.	943	5
" 24, 12 M.	1031	2
" 27, 5 A. M.	726	4
May 8, 6 A. M.	819	5
" 11, 1 A. M.	948	1
" 11, 9 A. M.	1026	4
" 19, 2 P. M.	802	7
" 23, 2 P. M.	987	3
" 28, 11 A. M.	993	5
" 29, 3 P. M.	807	1
June 9, 3 P. M.	882	3
" 14, 11 P. M.	988	1
" 15, 0 A. M.	1018	2
" 20, 8 A. M.	806	2
" 29, 11 A. M.	877	2

REMARKS—No. 1 in the classification of influences is the greatest power. The average movement of the influences for the three months ending June 30th, 1854, will be about 892 miles a day—being 28 miles more than the general average, and 36 miles above the average for the first three months of the year. From this statement of facts there appears to be, in summer, an increased activity manifested in atmospheric circulation, as it relates to the velocity of influence, and the movement of storms.

The longitudinal circulation of the atmosphere has it nodes or places of crossing distributed, first, according to certain dynamical laws; and secondly, by the condition of certain relations subject to these laws. The minimum and maximum lines of pressure, as indicated by the barometer, correspond to these nodes, and likewise travel eastward under the influence of the action of the same laws.

Besides the atmospheric disturbances or waves that move around the earth from West to East, there is also another kind of storms that have their origin in the torrid zone, and differ essentially, in the phenomena presented, from the extended ones of temperate climates. Such storms, when rotating out of the torrid zone and visiting the northern temperate regions of the earth, may be called "southwesters" from the fact that they always approach us from that point. During their prevalence the upper strata of clouds are also sometimes seen, through openings in the lower, moving slowly from the southwest, while the surface current is generally moving with great velocity from the north-east.

These storms are first formed in the torrid zone by the action of the laws of atmospheric influence, and are carried by the trade-winds to the westward with a velocity, said to be less than fifteen miles an hour; with this slow rate of progress, they struggle in these strong currents that flow without ceasing, to the equator; but instead of approaching it, as would be inferred from a glance at the trade-wind system, they recede in a line, forming a curve to the northward, and finally enter the belt of high barometer near lat. 30° north; being there freed from the trade-wind influence of the equator, they move in a direct line and with an increasing velocity, to the north-east, if the primary storm influences favor the egress, but if such is not the case they scatter or connect with the ordinary disturbances of our zone.

The most favorable time for a visit from a rotating storm, is when two or more of the influences are moving with a space of considerable vacancy intervening. Such a position seems to invite the "southwester" from its home in the torrid zone. It connects with the central line of the intermediate space in the belt of high barometer—emerges with the south-west trade winds, and then if it moves it must move towards the north-east.

The first calculations ever published respecting the appearance of one of these storms was verified by the predicted one passing over the eastern part of the North American continent on the 26th of February last. After it had escaped from the torrid zone and passed the belt of high barometer, it moved to the north-east, between two influences or nodes of minimum pressure, that were travelling with an intervening space of about 9,000 miles, and extending, theoretically, from North to South, Continuing to occupy this central line of vacant space, its north-eastern course is due to the eastward progress of the storm lines in its advance and rear.

The cyclonic action of storms is only manifested between the tropical belts of high barometer; and if we inquire for the course we will find it existing in the physical condition of the earth and atmosphere, and in their adaptation to the effects of those peculiar forces that induce storms to travel eastward in every part of the globe.

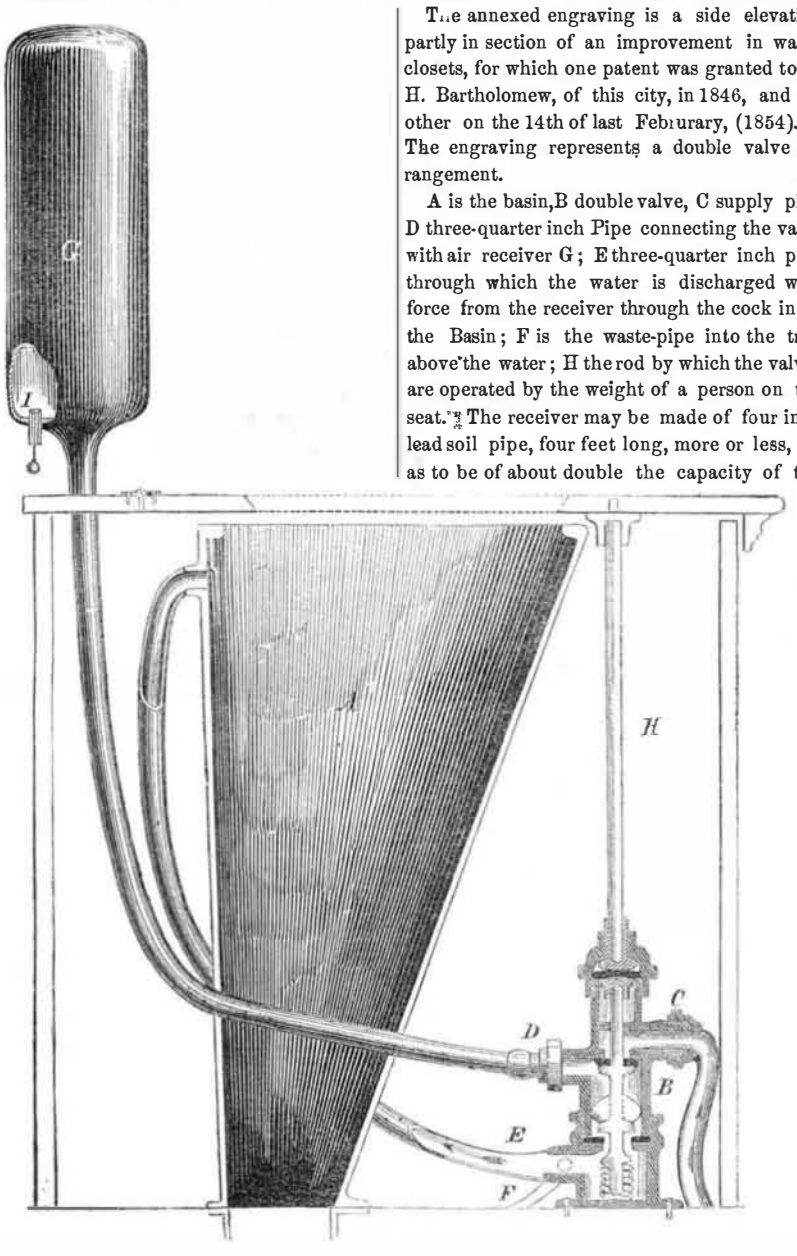
With this explanation of the rotary theory of storms, the problem involving the laws and conditions of the phenomena accompanying "southwesters," is solved so far, that isolated facts, and observations can no longer be depended upon; but in analyzing any theory of storms, the whole system of atmospheric circulations must be brought into view, and the deductions made in accordance with the principle adduced, from the theory of atmospheric influence.

J. HALL.

Athens, Menard Co., Ill.

[This communication came too late for publication in the last number of the "Scientific American.

BARTHOLOMEW'S IMPROVEMENT IN WATER CLOSETS.



The annexed engraving is a side elevation partly in section of an improvement in water closets, for which one patent was granted to F. H. Bartholomew, of this city, in 1846, and an other on the 14th of last February, (1854).—The engraving represents a double valve arrangement.

A is the basin, B double valve, C supply pipe D three-quarter inch Pipe connecting the valve with air receiver G; E three-quarter inch pipe through which the water is discharged with force from the receiver through the cock in to the Basin; F is the waste-pipe into the trap above the water; H the rod by which the valves are operated by the weight of a person on the seat. The receiver may be made of four inch lead soil pipe, four feet long, more or less, so as to be of about double the capacity of the quantity of water desired to be used each time. I is a valve opening inwards, in G, for the purpose of admitting air into the chamber, and keeping it charged with the same, in case the water should not all run out, or in case the air should from any cause be expelled. This valve may be inserted in any other part of the air chamber, but it seldom requires to be used.—This double cock is designed to avoid the great waste of water which attends the use of most kinds of cocks, and is a desirable article in all places where the economical use of water is desideratum. These cocks consume a limited quantity of water each time the closet is used, taking no more water whether the seat is set upon one hour or one minute, no water being thrown into the basin while the seat is set upon.

When the valve is pressed down by the seat, the water passes from the supply pipe C through D, into the chamber G, until the air in it becomes so compressed as to balance the pressure of water in the supply pipe when the inlet flow of water will cease, however long the upper conical valve may be left open. No water is therefore discharged into A while a person is seated, but upon the removal of pressure from the seat, the upper valve, by the spring on the stem below, is forced up into its seat, and then communication is opened between the pipe D, and the one E, leading into H. The pressure of the air in G, therefore forces the water into A, and thus, the quantity of water for washing out is always graduated by the supply pressure, for the purpose set forth.

By the use of this valve and receiver, the use and expense of the cistern, service-box, valves, cranks, ball and ball cock, overflow-pipe, levers, &c. are avoided—the whole of this fixture (except the receiver) being placed under the seat out of sight, making a cheap and simple, arrangement. The water cannot overflow, there being no opening for it except into the waste tube or into the basin, and consequently should the valve become leaky, it cannot wet the floor, but must leak only into the discharge-pipe, keeping the floor dry. One-Service pipe will supply any desired number of these double valves, and not prevent a proper force of water throughout other parts of the building.

This double valve aparatus is not likely to freeze, as the receiver is always empty during the night and whenever not in use, the waste tube discharges all the water above the valve.

These apparatuses are extensively used, and are applicable for private houses, and public buildings, in various places. They are made by the patentee, at No. 84 Marion-st., this City, where more information may be acquired repecting them.

Lowell Spindles.

The number of spindles run by the incoporated companies at Lowell is 349,898; number of males employed, 4607; number of females employed, 8743; total 13,250. There are 2,100,000 yards of cotton cloth, 27,000 yards of woolen, 25,000 yards of carpet and 50 rugs made per week, for which there are consumed weekly 700,000 pounds of cotton and 99,000 pounds of wool. The population of the city is about 35,000.

A shock of earthquake was experienced in Macon, Ga., on the 20th. It lasted 40 seconds. No damage was done.

LITERARY NOTICES.

OLD BLACKWOOD—Blackwood's Edinburgh Magazine for March is just issued by its enterprising American publishers, Leonard Scott & Co., this city. This is allowed to be the most able and famous monthly magazine in the world. The present number contains a biograph of D'Israeli, and another article, named the "Epidemics of the Middle Ages."—two out of ten powerful original articles—which are worth the price of the work.

THE OLD FARMERS' ALMANACK.—By Robert B. Thomas,—number sixty-two. We are indebted to Messrs. G. & C. Merriam, of Springfield, Mass., for copies of this old familiar acquaintance.

COACHMAKER'S GUIDE—This is a work which is published yearly by C. W. Saladee & Co., of Columbus, Ohio. It contains two large charts with excellent draughts of various kinds of fashionable carriages, both American and European. The drawings for the volume of 1854, are now preparing in this city and will be issued in June next. This publication is one of the most useful in our country, and we heartily commend it to the attention of all coachmakers.

PHRENOLOGICAL JOURNAL AND WATER CURE JOURNAL.—These interesting monthlies are issued with great promptness by Messrs. Fowlers & Wells, of this city; they are crowded full of useful and entertaining matter which will be found serviceable and timely to all. Terms of each, $1 a year.

HOUSEHOLD WORDS—April number just received from McElrath & Barker, No. 17 Spruce street. The present number completes the volume of this valuable and interesting publication, and it is therefore a good time to subscribe. A new story, entitled "Hard Times," by Charles Dickens is announced for the future numbers of the work.

THE SHIPBUILDER'S MANUAL.—The twelve numbers of this work, edited by John W. Griffiths are now complete and for sale by Adriance, Sherman & Co., this city. It is a very useful work to all shipbuilders.