Scientistic American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors. PUBLISHED WEEKLY AT

No. 261 BROADWAY, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

Clubs.—One extra copy of The Scientific American will be supplied gratis for every club of five subscribers at \$3.20 each: additional copies at same proportionate rate. Postage prepaid. Remit by postal order. Address

MUNN & CO., 261 Broadway, corner of Warren street, New York.

The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year, postage paid, to subscribers. Single copies, 19 cents. Sold by all news dealers throughout the country.

Combined Rates — The SCIENTIFIC AMERICAN and SUPPLEMENT

will be sent for one year postage free, on receipt of seven dollars. Both papers to one address or different addresses as desired.

The safest way to remit is by draft, postal order, or registered letter Address MUNN & CO., 261 Broadway, corner of Warren street, New York

Scientific American Export Edition.

The SCIENTIFIC AMERICAN Export Edition is a large and splendid periodical, issued once a month. Each number centains about one hundred large quarto pages, profusely illustrated, embracing: (1.) Most of the plates and pages of the four preceding weekly issues of the SCIENTIFIC AMERICAN, with its splendid engravings and valuable information; (2.) Commercial, trade, and manufacturing announcements of leading houses. Terms for Export Edition, \$5.00 a year, sent prepaid to any part of the world. Single copies 50 cents. The Manufacturers and others who desire to secure foreign trade may have large, and handsomely displayed anouncements published in this edition at a very moderate cost.

The SCIENTIFIC AMERICAN Export Edition has a large guaranteed circu-

lation in all commercial places throughout the world Address MUNN & CO., 261 Broadway, corner of Warren street, New York.

NEW YORK, SATURDAY, APRIL 15, 1882.

Contents.

(Illustrated articles are marked with an asterisk.)

Agricultural inventions 226
Arctic ocean cable, an 221
Bar iron shear, powerful* 231
Beer, glycerine in 232
Boiler explosion, experimental* 230
Boiler notes, steam 229
(able, ocean, Arctic, an 226
Car couplers, self-acting 228
Cement for glass and metal 228
(Coal piers, gravity, at Hoboken* 226
Compression, effects of 232
Compression, effects of 232
Contract fish, in America 224 Culture, fish, in America. 244
Dynamo machines, resistance of 228
Earthquake in Central N. Y. 225
Electric. capac. of heated bodies 229
Electrical regulator new* 231
Electrical regulator new* 231
Electrical regulator new* 232
Engineering inventions. 229
Experimental boiler explosion* 230
Fan ventilator, a 232
Fence posts, preserving 229 an ventilator, a ence posts, preserving sh culture in America our paste...... oods for infants and invalids...

Inventions, miscellaneous Inventions, miscellaneous 236
Inventions, recent 228
Inventions, recent 228
Inventions, recent 228
Inventions, new 227
Keel, heavy, for a small yacht. 228
Keel, heavy, for a small yacht. 228
Malaria and locomotives 225
Malaria and locomotives 225
Malaria and locomotives 225
Malaria and locomotives 225
Malaria and locomotives 226
Potes and queries. 226
Pick lock, a precoclous 226
Piers, coal, gravity, at Hoboken 228
Piants, the daily swelling of 229
Plate planer, improved 231
Potevin, M 255
Potevin, M 255
Potevin, M 255
Potevin, M 255
Regulator, electrical, new 231
Steam boiler notes 232
Regulator, electrical, new 231
Steam boiler notes 232
Steel process, new 232
Steel process, new 232
Steel process, new 331
Tobacco plug patent invalid 235
Town building industries. 238
Ventilator fan, a 232
Wanut trees 232
Walnut trees 232
Wanut trees 232
Wanut trees 232
Zoological necropolis, a 232 Iron ore in North Carolina.

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 328,

For the Week ending April 15, 1882.

Price 10 cents. For sale by all newsdealers

- I. ENGINEERING AND MECHANICS.—Three Systems of Wire Rope Transport. By W. T. H. CARRINGTON.—Running rope system. Double fixed rone system.—Single fixed rone system.—8 figures 522 On Warming and Ventilating Occupied Buildings. By A. MORIN. (Continued from No. 327.)-Churches.-Railroad stations.-Glass roofs and ceilings.—Dwelling houses.—3 figures.....
- II. TECHNOLOGY AND CHEMISTRY.-New Treatment of Distil-

The Rectification and Disinfection of Impure Alcohols according to the Methods of L. Naudin, R. Pictet, and Eisenmann.-Report of M. A. SCHLUMBERGER.—A valuable statement of the methods developed in France for rectifying alcohols by cold, electricity, etc.,

in the manufacture of brandy out of beet sugar refuse...... Some of the Industrial Uses of the Calcium Compounds. By THOMAS BOLAS.—Second Society of Arts lecture.—Lime.—The calcination of the carbonate in theory and in practice.—Influence of foreign bodies on the quality of the lime.—Most favorable conditions for the decomposition of calcium carbonate.—Cements and their uses.—Lime as a refractory material.—Lime light.—Oxyhydrogen furnace. - Lime moulds for iron and steel castings. - Other industrial and economic uses of lime

- III. HYGIENE AND MICROSCOPY.-Cereal Foods. An examination of extensively advertised cereal foods. By EPHRAIM CUTTER, M.D. 28 figures. An extremely important report of the microscopic appearance of some forty or more cereal foods. The genuine, the spurious, the worthless and the fraudulent.—Therapeutic and dietetic facts of great value to physicians and their patients.—The constituents of the wheat grain and of food pre-
- IV. NATURAL HISTORY, ETC.-A Notable Elephant. 2 figures (full page). Attempt to remove Jumbo, the great African elephant, from the Zoological Gardens. London..... English Cart Horse Show, Large illustration. Prize Animals at the Cart Horse Show, Agricultural-Hall, London... The Philosophy of Animal Colors. By Dr. Andrew Wilson ... 5225
- V. ELECTRICITY, ETC.-Recent Wonders in Electricity. By W. H. PREECE Second Society of Arts lecture. Generation of electricity.— Electro-magnetism.— Effects of electric current.—Currents for lighting purposes.—Arcand incandescent lamps.—Transmission of motive power.—Electric motors and their uses...... 5231

A NEW FIELD FOR INVENTION.

does not appear to have been much explored. In all parts tors of the soil find it difficult or impossible to eradicate by the means now in use. In New South Wales, for instance, there are two plants, rather slow of growth, which have repeated returns of the same comet. taken possession of many parts to such an extent that the clearing of the land would cost more than the land is worth, where land sells for \$20 an acre.

The first, which flourishes in the warmer parts, is a cactus called the prickly pear; the other, which is confined to the dred million miles distant, and yet it has a bright, well defined cooler parts, is the English sweetbrier, the English wild rose thus proving as severe an affliction to parts of Australia as the Scotch thistle has in other regions.

In view of the similarity of animal and vegetable life, and the case with which animal pests can be destroyed by poison. our correspondent raises the query whether some means of anything that would answer the purpose; and in other places I suppose it would be still more valuable."

If poison is used, it should be the inventor's aim to find one its way into Cepheus, where it will arrive some time in May, that would be fatal to the plant to be exterminated and yet harmless to other plants, or at least not such as to leave in headlong toward the sun, till it reaches that fearful proximity the soil elements that would spoil it for future cultivation, to the great luminary which is a groundless cause of Poisons that would injuriously affect the water supply for anxiety in many minds. use by men, domestic animals, or fish, should be not less carefully avoided.

pressibly thrifty as to be a nuisance is to find some way to approach to the sun as a possible means of learning someutilize it. Not a few of our most useful plants were once thing concerning the physical structure of the huge globe of rank pests, owing to their persistent invasion of lands employed for other purposes. When a use has been discovered destiny of the human race. for their fiber or other properties, the thriftiness which made them a nuisance now only adds to their value.

would seem to be to study the conditions of its local abun-inclination, 74° 47'; perihelion distance about ten million dance, and correct them, if possible, by means which will miles. make the soil more suitable for other uses. The charming sweetbrier of the English roadside causes no trouble there. ler's computations give: Longitude of perihelion, 62° 30'; Transplanted to New South Wales it finds conditions in the longitude of node, 200° 11'; inclination, 70° 51'. climate and soil, or a lack of vegetable competitors, which enable or allow it to flourish to a degree impossible at home. mers will doubtless map its course, and repeated observa-Most weeds are "exotics" of this class. It may be that in tions will modify results. Even if the figures are at fault the cases named, and in others like them, some mineral, in minute particulars, there is every reason to expect that a harmless or else useful to cultivated plants, placed about comet of grand and awe-inspiring proportions will in the the roots of the plant to be eradicated, may put an end to coming months span the heavens with its gossamer train; its thriftiness or kill it outright. Failing in that, the invent hat there will be intense excitement in watching its near tor may find poisons which, while they destroy the plant approach to the sun; that it will be observed and studied as pests, will themselves be destroyed or made inert by the comet was never observed and studied before; and that unjuices of the plant they act on; or poisons which kill specific less men of science are greatly mistaken, it will take rank vegetable growths without injuring other useful plants or with the distinguished comets of 1811, 1843, 1858, 1861, and animals.

The field, as has been already noticed, is a wide one, and comparatively unworked. The values to be affected by successful inventions in it are enormous, and the inventions themselves could hardly fail to be remunerative.

COMET a 1882.

The first comet of the present year has been discovered. that the celestial visitor will prove a brilliant member of the cometic family. The comet was picked up on the 18th of minutes long, and a bright nucleus, shining like a star of and growth of the carp. He advised the putting of a few the eighth magnitude. The tidings of the discovery carp in trout ponds to keep the ponds clean. quickly made its way over the civilized world, and the new- Assistant United States Commissioner Mather read an indoubled its light, and more than doubled its tail.

friend renewing acquaintance or whether this is its first visit below sawmills. He said: to the clime of the sun.

computed the elements, and an ephemeris of the comet, from may be true to some extent, but I doubt it, for the reason observations made at Ann Arbor and Cambridge, which, that sand or other material does not appear to injure the however, can only be considered as approximate, until confirmed and strengthened by future observations. Professor inclined to think that the mills are destructive merely to the Boss, of the Dudley Observatory, has made similar compu- young by covering the spawning beds to some extent, but tations, his results differing considerably from those of Mr. more by the absorption of turpentine from the pine or tan-Chandler. The medium of the two computations is proba- nin from the oak, the evil effects of which we know too \dots 5225 bly a more reliable guide to the path of the comet.

Some interesting facts and possibilities may be deduced from the combined labors of the two brilliant astronomers, ful method of transporting impregnated eggs to long diswho are first in the field.

Comet a is remarkable for its small perihelion distance. temperature. According to Mr. Chandler it will come within a hundred

thousand miles of the sun, passing through the corona and A correspondent, writing from New South Wales, calls perhaps grazing the photosphere. Mr. Boss estimates the attention to a wide and promising field of invention which | distance at ten million miles, but both observers agree in prophesying a very near approach. Few instances are reof the world there are many noxious plants, which cultiva- corded of comets coming so near the sun. Those of 1880, 1843, and 1630 had nearly the same perihelion distance, but these dates are considered by many astronomers as marking

> The new comet makes its perihelion passage about the middle of June, and a magnificent display may be anticipated about that time. It is noteworthy for its great brilliancy under present conditions. It is now nearly two hunnucleus, and a well developed tail. It is reasonable, therefore, to infer that it is a large comet, since it presents so brilliant an aspect at a distance so immense. As it is coming toward us at the rate of 2,000,000 miles a day, it cannot long remain invisible to the naked eve.

This is the history of Comet a, as far as it is known, but killing these vegetable pests might not be found that would there is a rich promise of an entertaining visitor in our sky be cheaper and more efficient than manual labor. "There during the months of April, May, and June. The erratic is a lot of money to be made in this country," he says, "by stranger is moving westward and northward, having greatly changed its position since it was discovered. It has passed from Hercules into Lyra, within a few degrees of the brilliant The matter is obviously worthy of thoughtful attention. Vega, has now reached the confines of Draco, and is making when it will make a sudden turn and seem to plunge

Those who know the most about cometic astronomy are the least disturbed concerning any untoward accidents in Obviously the best way to dispose of a plant that is so irre- its passage; and astronomers are looking forward to its close fire that is intimately and inseparably interwoven with the

The elements of the orbit of Comet a are thus given by Professor Boss: Time of perihelion passage, June 15; lon-If no use can be found for the pest, the next best step gitude of perihelion, 49° 35'; longitude of node, 206° 39';

April 14, R. A. 18h. 50m., Dec. 51° 9' N. Mr. Chand.

As the comet approaches nearer the earth other astrono-1880 on the cometic annals of the nineteenth century.

FISH CULTURE IN AMERICA.

The eleventh annual meeting of the American Fish Cultural Association began in this city April 3. A large number of the more active State and national Fish Commissioners and other friends of fish and fishing were present.

The meeting was called to order by the Vice-President, Mr. C. S. Wells, an assistant at the Dudley Observatory, Mr. George S. Page, of this city, who gave a most encourage Albany, was the fortunate finder, and there is a fair prospect ling account of the success which had attended the artificial propagation of trout, shad, and black bass.

The Secretary, Mr. Barnet Phillips, read a paper by Mr. March, in the constellation Hercules. It had then a tail five H. D. McGovern, of Brooklyn, on the habits, endurance,

comer has been closely watched by practiced observers teresting paper on a remarkable development of embryo through the best telescopes, whenever the sky has been salmon. It had been his belief that the absorption of the clear enough to permit a glimpse of its presence. It behaves sac was necessary for the complete development of the much like other members of the same family under the same young fish, but he had been convinced of the contrary by an conditions, increasing in brightness, spreading out its gossa- accident which happened in a newly constructed hatchery mer train, and speeding swiftly on a course that every day at Roslyn, L. I. The imperfect tarring of one of the troughs brings it nearer to terrestrial territory. In the short time caused a liver disease in the young fish, leading to a casting that has elapsed since its first appearance it has traveled off of the sac; but when placed in another trough the fish many million miles through the blue depths of space, nearly lived, took food, and developed naturally. The cause of the trouble he suspected to have been turpentine absorbed by Astronomers are busy in watching its movements, noting the water from the exposed and freshly cut pine boards of its indications, computing its elements, and deducing from the trough. Once before he lost a lot of young California these premises an ephemeris that will be a guide to its pres- salmon by batching them in an oaken trough, the tannin of ent position in the sky, and a means of detecting by a com- which perceptibly impregnated the water. These experiparison of orbits whether the mysterious stranger is an old ences led him to consider the cause of the extinction of trout

"The theory of the fishermen near sawmills is that Mr S. C. Chandler, Jr., of the Harvard Observatory, has sawdust gets into the gills of trout and kills them. This gills, and I have taken adult trout below sawmills. I am well."

Commissioner McDonald, of Virginia, described a successtances, their development being retarded by reduction of

Mr. Blackford spoke of the recent shipment of 14,000,000