Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

NO. 87 PARK ROW, 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.

The Scientific American Supplement

is a distinct paper from the Scientific American. The Supplement is issued weekly; every number contains 16 octavo pages, with handsome cover uniform in size with Scientific American. Terms of subscription for Supplement, \$5.00 a year, postage paid, to subscribers. Single copies 10 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 apers to one address or different addresses, as desired.

The safest way to remit is by draft, postal order, or registered letter. Address MUNN & CO., 37 Park Row, N. Y.

By Subscriptions received and single copies of either paper sold by all the news agents.

VOL. XXXVI., No. 10. [New Series.] Thirty-second Year.

NEW YORK, SATURDAY, MARCH 10, 1877.

Contents.

(Illustrated articles are marked with an asterisk.) Alberteic, a new. Answers to correspondents. Architecture, city Astronomical notes. Barbarians, in ustrial*. Bicarbonate of iron. Blower, position of a (32). Blowers, fan (25). Blue glass de peption, the. Blue glass skeptics, more. Boller explosions. Boilers, economy in (12). Boilers for small engines (31). Boilers, noise in (1)..... 155 156 155 Beilers for small engines (31). Beilers, noise in (1). Beilers, pressure in (11). Beilers, pressure in (11). Beilers, pressure in (11). Beilers, pressure in (12). Bridge, the East river foot*. Bronzing (28). Burrs, power for (13). Burrs, power of (13). Cement for hard rubber, etc. (39). Color blindness on railroads. Comet, a new. Compressed air power (15, 16). Concrete wall, a. Cornak power (10). Barth, the shape of the. Engine for sawmill (23). Engine room ventilation (28). Excitement and business. Fans, Japanese. Fire arms for the Turks. Fire in trees. Tungstate of soda (3)...... Vienna bread oven, the (6). Glassmaking, curiosities of*

TABLE OF CONTENTS OF

THE SCIENTIFIC AMERICAN SUPPLEMENT, No. 62,

For the Week ending March 10, 1877.

I. ENGINEERING AND MECHANICS.—On the Minute Measurements of Modern Science, by Alfred Meyer.-The Spherometer; Instrument for Measuring the Radii of Spheres, with 3 engravings.—The Flash Light.—New Telegraph Cable Grapnel.—The 100 Ton Gun at Spezzia, Italy, with 14 illustrations; description of the gun, table of the results of firing, engravings of the targets, the apparatus for measuring velo-city, drawings showing the penetration of 22 inch iron plates by the shot, etc .- On the Rolling of Ships; a paper read before the Society of Engineers, by WILLIAM MCNAUGHT, with 2 figures: and description of a new and simple device for the Prevention of Rolling.-Cleaving Rocks

without Powder.—Decline of English Steam Engines.

Pipes for Gas and other purposes, with 3 figures. Murdoch's Mains; the Chameroy Pipes of Tinned Sheet Iron; Wood and Asphalt Pipes; Paper Pipes; Cement Pipes; Slate Pipes, Cast Iron Pipes.—The Odorless Excavating Apparatus Exhibit, with 6 illustrations.-Production of Peat Steel.-A Hornet Fleet: description of new Gunboats for China Venetian Marine Architecture.

- II. TECHNOLOGY.-Adulterations of Soap.-False Beeswax, how made -Production of Vanadium Aniline Black.-Belgian Process for Bleaching Linen and Cotton.—Dyeing of Mixed Goods.—Methyl Green for Cotton.—Dark Yellow Brown.—Transfer of Pattern Designs.—New Size.—The French Worsted Manufacture; an interesting paper.—On the Cleaning of Wools; Bleaching and Scouring of Wools: valuable practical information.-School of Weaving, Lyons.-On Silk Printing by M. D. Koeppelin; Preparation or Moranting; Printing; Fixing or Steaming; Washing; Bluing; Finishing; Mordants and Various Preparations.-The Keramic Art.-Ostruthin.-Potassium Triodide Test for Sugar.—Cryolite and its Uses, by WILLIS BRENTON, PH.G.—Inaugural Essay before the Philadelphia College of Pharmacy.
- III. LESSONS IN MECHANICAL DRAWING. New Series, No. 6. By Professor MacCord. With several illustrations.
- IV. AGRICULTURE, HORTICULTURE, ETC.-Discovery of an Effective Remedy for the Grape Vine Disease.-Loss of Shade Trees in Cities Structure of the Mushroom.—Cheap Greenhouses and How to Heat them. By Peter Henderson. With 2 engravings. The author is one of the most experienced florists. In this valuable practical paper he illustrates clearly how to heat single and double greenhouses the least expense; gives the plans for the flues and the full costs for construction of the houses.
- V. NATURAL HISTORY, MICROSCOPY, ETC.-Pollen. By W. G. SMITH. Being a Microscopical Examination of the Pollen of various well known flowers and plants. With 94 illustrative figures. A valuable and interesting paper exhibiting the beautiful forms of pollen grains, their most prominent characteristics, of especial interest to florists. indicating the plants best suited for hybrizidation, etc.-Practical Value

PUBLISHERS' NOTICE.

New subscriptions to the Scientific American and the SCIENTIFIC AMERICAN SUPPLEMENT will, for the present be entered upon our books to commence with the year, and the back numbers will be sent to each new subscriber unless a request to the contrary accompanies the order.

Instead of a notice being printed on the wrapper, announcing that a subscription is about to end, the time of expiration is now denoted in the printed address each week, so that the subscriber may see when the period for which he has prepaid is about to expire.

LEMURIA, THE LOST PARADISE.

In our review of Mr. Alfred Wallace's new conclusions relative to the geographical distribution of animals, we noted his very important statement that the study of the present habitations of both animals and plants may add greatly to our knowledge of the past history of our globe. In fact, the chief deduction which Mr. Wallace draws from his extended investigations is that such study may reveal to us, in a manner which no other evidence can, which are the oldest features of the earth's surface, which the newest, and which have sunk beneath the ocean and thus been blotted out for ever. It will be seen, therefore, that in the study of organic life we are brought face to face with one of Nature's own records. As in the rocks she writes of the birth of new continents and new islands, and of the time when, and the conditions under which, these mighty additions to the earth's surface were made: so in the habits of organized creatures she conceals the history of her destructive work. By the aid of such knowledge as to past organic mutations as the geological record supplies us with, we can determine the probable birthplace and subsequent migrations of the more important genera and families; and in this way, while reaching a conception of that grand series of co-ordinated changes in anthropomorphous apes. The selection of this locality, the earth and its inhabitants, whose final result is seen in the Peschel points out, is far more orthodox than it at the first forms and geographical distribution of existing animals, at the same time we embark on a quest of lost lands.

(It is a remarkable fact that traditions substantially agreeing with the Biblical account of the Deluge exist among every known people on the earth. Among the Hindoos, Greeks, Chinese, Mexicans, Peruvians, Feejee Islanders, the legends are closely similar; and it is but recently that, from the clay tablets of the Chaldeans, the late Mr. George Smith deciphered still another account of a great flood. It is besides true that, among a great many peoples, there are traditions of countries which no longer exist. Even on old Venetian maps the lost island of Atlantis, lying west of the Azores, prominently figures. The Greek geographers mention the island; and its sea kings, tradition says, invaded Europe and Africa, but were defeated by the Greeks and their allies. Whether that land was a myth, or whether it was America, is an open question (in view of Dr. Schliemann's discoveries. it is perilous to pronounce any ancient legend baseless); but this aside, the story goes that the Atlantides became so desperately wicked that a deluge swallowed up their island. Biblical critics, or at least the majority of them, have long since recognized the fact that, unless the supposition of a series of the most stupendous miracles be made, the theory of the Deluge covering the entire earth must be set aside: and, in lieu thereof, the view is preferred that the flood covered only the small area forming the basin of the Euphrates and Tigris rivers, which then was the sole region occupied by the human race. If, however, we couple the two traditions, namely, deluges and lost lands, there will appear a probability that all relate to similar phenomena, which continents by the sea. Therefore it might be a more scientific view of the Flood to ascribe it to this well understood man was still confined to the little region in Mesopotamia.

those physical divisions were bounded on the north by a considerable extent of sea, and hence probably formed part hypothetical land occupied the whole area now inhabited by lemuroid animals, we must extend it to Burmah, South China, and the Celebes.

last continent, Lemuria, we need follow geology in the person of Mr. Wallace no longer, but pass to Herr Peschel's views of the great importance of this hypothesis to the history of our race. Peschel, in his chapter on the first home of humanity, states that all oceanic islands, when first discovered by European navigators, were uninhabited; and and their changes, he seeks to determine which division was which have been built especially to solve the problem of

the probable cradle of humanity. The basis of his inquiry is the fact that the more highly integrated creatures are the newer, the less perfectly integrated, the older; and measured by this standard, Australia and South America are speedily eliminated from the question. North America has remained primitive in the second highest order of mammalia. Our continent has no tailless ape; and it is where the highest animals appear—the chimpanzee, the gorilla, and the orang -that we must also look for man. Searching through the Old World, the lowlands of Siberia are geologically too recent; while if Europe had been the starting point, we should have found fossil men, as we have fossil apes. In Southern Asia, British India has been studied geologically with great minuteness; and judging from the types of mammals found, our primordial parents cannot be localized there.

The inquiry is now narrowed down to Lemuria, a continent, Peschel asserts, required by anthropology; for we can then conceive that the inferior populations of Australia and India, the Papuans of the East Indian Islands, and lastly the negroes, would thus be enabled to reach their present abode by dry land. Such a region would also be climatically suitable: for it lies in the zone in which we now find the glance might appear; for we here find ourselves in the neighborhood of the four enigmatic rivers of the Scriptural Eden—in the vicinity of the Nile, the Euphrates, the Tigris, and the Indus. By the gradual submergence of Lemuria, the expulsion from Paradise would also be inexorably accomplished. To this may be added that ecclesiastical writers, such as Lactantius, the venerable Bede, Hrabanus Maurus, Kosmos Indicopleustes, and also the anonymous geographer of Ravenna, placed the Scriptural Paradise in Southeastern Asia, and some explicitly state that it was on a detached continent, and that the ingenious maps of the middle ages exhibit the first parental pair on a land surrounded by sea. lying beyond India, This explains how Columbus, after the discovery of South America, taking it for an insular continent lying southeast of the mouth of the Ganges, wrote home to Spain: "There are great indications suggesting the proximity of the earthly Paradise, for not only does it correspond in mathematical position with the opinions of holy and learned theologians, but all other signs concur to make it probable."

Herr Peschel's hypothesis need not disquiet those who prefer to believe that Paradise was nearer to the eastern lands of the Scriptures. Its value, its author states, is that "it challenges a geological investigation of Madagascar, Ceylon, and the island of Rodrique, as well as deep sea soundings in the Indian Ocean, to ascertain whether vestiges exist of the higher points of vanished Lemuria."

CITY ARCHITECTURE. There is a widely extended discussion now going on as to are the subsidence or overflowing of islands or portions of the merits of the better class of houses built in these days. Dr. Richardson attacks them on sanitary grounds, and his condemnation is as sweeping and as unreasonable as that of natural action than to venture so violent an hypothesis, even Mr. Ruskin; and the only remedy which these gentlemen on the Mosaic account, as that, 1656 years after his creation, propose for the people of Great Britain is to sweep away every dwelling from one end of the island to the other. Such In the whole range of deductions reached by the study of exaggerated statements come naturally from the lips of Mr. the distribution of animals, there is none more striking than Ruskin, whose estheticism does good by inculcating a taste that which proves that a vast continent once existed extend- for correctness and purity in style and for genuineness and ing from the island of Madagascar to Ceylon and Sumatra. thoroughness in work; but Dr. Richardson has more utilita-Examination of the fauna of Africa and of Madagascar shows rian aims, and such wild propositions serve only to repel that in Africa, especially in the east, there is an abundance of people from the consideration of the many sensible suggeslarge ungulates and felines (elephants, lions, etc.), all of tions which he has made. Although it may be theoretically types now or recently found in India and Western Asia. true that a kitchen should be at the top of the house, it is Again, the fauna of Madagascar is wanting in all the larger not necessary to destroy a dwelling that has one at the botand higher African forms, and has a wonderful resemblance tom; and the people who live in modern houses are not so to that of Malaya and South America. We are, therefore, contemptible, either physically or morally, that their homes sure that Madagascar must have been separated from Africa should be demolished at the instance of these architectural before the assemblage of large animals, above referred to, reformers on account of their unfitness for habitation. Arhad entered. There is proof that, during early tertiary chitects and hygeists would do much more for their contemtimes, a continuous sea, from the Bay of Bengal to the British poraries, and for art and science too, if they would show us Isles, completely cut off all land communication between how to make the best of what we have; to ventilate thor-Central and Southern Africa on one side and the great con- oughly our basement kitchens rather than to tear down our tinent of the eastern hemisphere on the other; so that houses; to lead our sewer gases away from our houses rather Southern Africa and Madagascar were then united, and the than to pull down one side of the structure to build a gas latter island helped to form the great continent over which shaft; in short, to improve the homes we must live in rather the tribe of lemurs were distributed. There is geological than to dream about those we might have if the world were evidence, in Ceylon and South India, all going to show that created to-day, and everybody began existence with unbounded wealth,

Of the comfort and wholesomeness of the better class of of a great southern continent. If we suppose that this American houses it is impossible too speak too highly. The ventilation is generally well provided for, and the heating is equable, and the temperature moderate; dryness in the cellars is an object which our architects spend much Having established the possibility of the existence of this pains to achieve; and usually ample light is admitted into the front and back rooms of our houses. But our readers will at once see that we speak of the houses found in the better quarters of our large cities; and our tenement houses in crowded neighborhoods, and many of the flimsy frame structures in rural districts, are scarcely capable of improvement without razing the entire structure. The evils in the from this and other considerations, he concludes that the first first are due to heavy taxation, which compels landlords to human beings were inhabitants of a continent. Then, by crowd their tenants on to the smallest possible area, and to examining into the resemblances of various peoples, he log-the inability of tenants to payrents for large apartments. But ically reaches the view that all our race, starting from a there is no reason why large buildings, each accommodating common habitat, may have gradually ranged over all conti- a great number of families, should not have every necessary nents and peopled them. He next takes each grand division provision for health and convenience. The houses of the of the earth in turn, and, by studying its zoological forms building corporations in London and other European cities,