# Srinutific Ampritm. <br> \section*{ESTABLISHED 1845} 

MUNN \& CO., Editors and Proprietors.
published weekly at
NO. B'Y PARK ROW, NEW YORK.
o. D. MUNN.
A. F. BeACH.

## TERMS FOR THE SCIENTIFIC AMERICAN

 One copy, one year, postage included...One copy, six months, postage included



Vol. XXXVI., No. 10. [NEW Series.] Thirty-second Year: NEW YORK, SATURDAY, MARCH 10, 1877.

| ${ }^{\text {chenstraded }}$ Cricestents. |  |
| :---: | :---: |
| ${ }^{\text {a }}$ ( of Sciences, New York. $152 \mid$ Gun, trial of the 100 |  |
|  |  |
| Answerst coorrespondent | Heath of enulisismc |
| Astronomiteal | Iee, cold from (ithe Hudid |
| barians, industr |  |
| Ver position of a | ron, the oldegtt piece of......... 148 |
| Elasass | Iranworkers, , hard times for.... ${ }^{150}$ |
| Boiler explosions | Lamp and blow |
| Boilers' for smanl | ${ }^{55}$ |
| ers, noise in |  |
| gee the Eastrer river foor | Patents, orticial ist of of Patentio Canada, worki |
| S, power for | Petroleum, ete Pinà hiol |
| Cement for hard rubber, etc. (3 |  |
| Cologne winderess as an rail | Pressure in iliration |
| Cometres anew iemeris | Rubber articl |
| k |  |
| th, the shape of the |  |
|  |  |
|  |  |
| arms for the Turk |  |
|  |  |
|  |  |
|  |  |
|  |  |

TABLE OF CONTENTS OF
THE SCIENTIFIC AMERICAN SUPPLEMENT,

## NO. 62,

For the Week ending March 10, 1877.

1. ENGINERRING AND MECHANICS, On the Minute Measurements on Modern Science, by ALPRED MEYRR.-The Spherometer: Instrument
for Measurng the Radio of Spheres, with 3 engravings.-The Flash
 of fring, en eravings of the targets, the apparatus, for measuring velo-
citr drawins city, drawingsshowng the penetration of 22 inch iron plates by the shot,
etc.-- On the Rolling of Ships $;$ paper read before the Society of Engi-etc.-. On the Rolling of Ships; a paper read before the Society of Engi-
neers, by wiLuIAM MCNAUGGT, with 2 figures: and deseription of new and simple edeviec for the Prevention of Rolling.
nithout Powder. - Decline of English Steam Engines. with out Powder.-Decine of English Steam Engnes
Pipes for Gas and other purnoses, with 3 figures. Pipes for Gas and other purposes. with 3 figures, Murdoch's Mans
the Chameroy Pipes of Tinned Sheet Iron: Wood and Asphalt Pines

 Peat Steel-A Hornet Fleet: de
V enetian Marine Architecture.
II. TECHNOLOGY.-Adulterations of Soap.-False Beeswax, how made.
 Cotton.-Dark Yellow Brown.-Transfer of Pattern Designs.-New Size.-The French Worsted Manufacture : an interesting paper.-On
the cleaning


 Essaa before the Philadelpha College of Pharmacy.
iII. LESSONS IN MECHANICAL DRAWING. New Series, No. G. By Professor MAccord. With several ilustrations.
V. AGRICULTURE, HORTICULTURE, ETC.-Dhscovery of an Effective Remedy for the Grape Vine Disease.-Loss of Shade Trees in Cities.them. By PETER HENDERSON. With 2 engravings. The author 18
one of the most experienced florists. In this valuable practical paper one of the most experienced florists. In this valuable practical paper he illustrates clearly how to heat single and double greenhouses with
the least expense; gives the plans for the flues and the full costs for the least expense; gives the
construction of the houses.
V. NATURAL HISTORY, MICROSCOPY, ETC.-Pollen. By W. G Sminf. 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 formsof pollen grains, their most prominent characteristces, of especial interest to florsts. 1 n
dicating the plants best suited for hybrizidation, etc..-Practical Vaiue of the Microscope

## 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 subscr
Instead of a the order
Instead of a notice being printed on the wrapper, an nouncing 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 rel ative to the geographical distribution of animals, we note 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 man ner 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 con tinents 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 creature she conceals the history of her destructive work. By the aid of such knowledge as to past organic mutations as the geolog ical record supplies us with, we can determine the probable birthplace and subsequent migrations of the more importan genera and families; and in this way, while reaching a conception of that grand series of co-ordinated changes in
the earth and its inhabitants, whose fnal result is seen in the the earth and its inhabitants, whose fnal rexisting 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 legend are closely similar; and it is but recently that, from the clay tablets of the Chaldeans, the late Mr. George Smith de ciphered still another account of a great flood. It is beside 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 des perately 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 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 floo covered only the small area forming the basin of the Eu phrates and Tigris rivers, which then was the sole region oc cupied by the human race. If, however, we couple the two traditions, namely, deluges and lost lands, there will ap-
pear a probability that all relate to similar phenomena, which are the subsidence or overflowing of islands or portions of continents by the sea. Therefore it might be a more scien
tific view of the Flood to ascribe it to this well understood tific view of the Flood to ascribe it to this well understoo natural action than to venture so violent an hypothesis, even
on the Mosaic account, as that, 1656 years after his creation, on the Mosaic account, as that, 1656 years after his creation
man was still confined to the little region in Mesopotamia.
In the whole range of deductions reached by the study of the distribution of animals, there is none more striking than that which proves that a vast continent once existed extend ing from the island of Madagascar to Ceylon and Sumatra Examination of the fauna of Africa and of Madagascar show that in Africa, especially in the east, there is an abundance of large ungulates and felines (elephants, lions, etc.), all of types now or recently found in India and Western Asia. Again, the fauna of Madagascar is wanting in all the larger and higher African forms, and has a wonderful resemblance to that of Malaya and South America. We are, therefore, before the assemblare of large been separateve referred to had entered. There is proof that, during early tertiary times, a continuous sea, from the Bay of Bengal to the British Isles, complete:y cut off all land communication between Central and Southern Africa on one side and the great con tinent of the eastern hemisphere on the other; so that Southern Africa and Madagascar were then united, and the latter island helped to form the great continent over which the tribe of lemurs were distributed. There is geological evidence, in Ceylon and South India, all going to show that 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 anmals, we must extend it to Burmah, South China, and the Celebes
Having established the possiblity of the existence of this last continent, Lemuria, we need follow geology in the per son of Mr. Wallace no longer, but pass to Herr Peschel's views of the great importance of this hypothesis to the his tory of our race. Peschel, in his chapter on the first home of humanity, states that all oceanic islands, when first dis covered by European navigators, were uninhabited; and from this and other considerations, he concludes that the first human beings were inhabitants of a continent. Then, by examining into the resemblances of various peoples, he log ically reaches the view that all our race, starting from a common habitat, may have gradually ranged over all conti nents and peopled them. He next takes each grand division of the earth in turn, and, by studying its zoölogical forms and their changes, he seeks to determine which division was
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 re cent; 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 ty pes of mammals found, our primordial parents cannot be localized there
The inquiry is now narrowed down to Lemuria, a conti nent, 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 anthropomorphous apes. The selection of this locality Peschel points out, is far more orthodox than it at the first glance might appear; for we here flind 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 detachea continent, and that the ingenious maps of the middle age exhibit the first parental pair on a land surrounded by sea lying beyond India, This explains how Columbus, after th discovery of South America, taking it for an insular conti nent 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 cor respond 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 pre fer to believe that Paradise was nearer to the eastern land 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 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
Mr. Ruskin; and the only remedy which these gentlemen propose for the people of Great Britain is to sweep awa every $d$ welling from one end of the island to the other. Such exaggerated statements come naturally from the lips of Mr . Ruskin, whose æstheticism does good by inculcating a taste or correctness and purity in style and for genuineness and thoroughness in work; but Dr. Richardson has more utilita rian aims, and such wild propositions serve only to repel people from the consideration of the many sensible sugges tions which he has made. Although it may be theoretically true that a kitchen should be at the top of the house, it is not recessary to destroy a dwelling that has one at the bot tom; and the people who live in modern houses are not so contemptible, either physically or morally, that their homes should be demolished at the instance of these architectural reformers on account of their unfitness for habitation. Ar chitects and hygeists would do much more for therr contemporaries, and for art and science too, if they would show us how to make the best of what we have; to ventilate thor oughly our basement kitchens rather than to tear down our houses; to lead our sewer gases away from our houses rathe than to pull down one side of the structure to build a gas shaft; in short, to improve the homes we must live in rathe than to dream about those we might have if the world were created to day, and everybody began existence with un bounded wealth
Of the comfort and wholesomeness of the better class of 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 pans to achieve; and usually ample light is admitted into he 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 house in crowded neighborhoods, and many of the flimsy frame structures in rural districts, are scarcely capable of improve ment without razing the entire structure. The evils in the first are due to heavy taxation, which compels landlords to crowd their tenants on to the smallest possible area, and to the inability of tenants to pay rents for large apartments. But there is no reason why large buildings, each accommodating great number of families, should not have every necessary provision for health and convenience. The houses of the building corporations in London and other European cittes which have been built especially to solve the problem of

