Scientific American.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

NO. 37 PARK ROW, NEW YORK.

O. D. MUNN. A. E. BEACH.

TERMS.

One copy, one year, postage included.....$3 20
One copy, six months, postage included..... 1 60

Club Rates.

Ten copies, one year, each $2 70, postage included.....$27 00
Over ten copies, same rate each, postage included..... 2 70

☞ By the new law, postage is payable in advance by the publishers, and the subscriber then receives the paper free of charge.

NOTE.—Persons subscribing will please to give their full names, and Post Office and State address, plainly written, and also state at which time they wish their subscriptions to commence, otherwise the paper will be sent from the receipt of the order. In case of changing residence, state former address, as well as give the new one. No changes can be made unless the former address is given.

If any of our readers fail to receive their numbers regularly; if the direction is not plainly written; if premiums are not received; or if there is fault of any sort at this office, we will thank our friends to send us postal card complaints, and repeat the same, if need be, until the remedy is effected. *Do not hesitate to complain.* We desire to keep all matters between ourselves and patrons right and satisfactory.

VOLUME XXXIV., No. 14. [NEW SERIES.] *Thirty-first Year.*

NEW YORK, SATURDAY, APRIL 1, 1876.

Contents.

(Illustrated articles are marked with an asterisk.)

THE SCIENTIFIC AMERICAN SUPPLEMENT.

No. 14.

For the Week ending April 1, 1876.

With 50 Articles and 58 Engravings.

TABLE OF CONTENTS.

The SCIENTIFIC AMERICAN SUPPLEMENT is uniform in size with the 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 SCIENTIFIC AMERICAN SUPPLEMENT will be sent together for one year, postage free to subscribers, on receipt of $7.00.

Remit by postal order. Address

MUNN & CO., PUBLISHERS,
37 Park Row, New York.

☞ Single copies of any desired number of the SUPPLEMENT sent to any address on receipt of 10 cents.

Milking Cows.

The milk of cows soon after they have calved contains more butter, and is much more easily churned, than it is afterwards. About five months after calving the milk undergoes a change, and the cream is not only less in quantity, but the butter globules are smaller. The reason why milk froths in churns is that, when it sours, alcohol is formed by the decomposition of the sugar of milk, and this causes the milk, when shaken or beaten, to foam or froth. If this froth exists to a large extent, butter will not come, and the milk is useless for churning purposes. The longer a cow is milked after calving, the less is the yield of butter, and the less nourishment is there contained in her milk.—*Land and Water.*

A BIT OF ANCIENT TRAVEL.

In our description of the Oera Linda alphabet (page 195 of our last issue), mention was made of the circumstance that among the many internal evidences of the genuineness of the Oera Linda manuscript was an account of a visit to the pile dwellers of the Alpine lakes, which could not have been written by any one in recent times. It is certain that the manuscript has been in the Oera Linda family for several generations, and equally certain that previous to 1853, when the first remains of pile dwellings were accidentally discovered, the existence of a people living in that way had been forgotten for a period of two thousand years. It rests with those who question the antiquity of the record to show how the following narrative, not to mention others, could have been invented at any time since the extermination of the lake men and the destruction of their remarkable settlements, of which the historians of Southern Europe make no mention.

The first and most ancient account of the pile dwellers is also the most complete and circumstantial. It occurs in the story of Apollonia, chief priestess or burgtmaagd of a place called Lindasburgt, which she describes at length, furnishing a remarkable picture of a civilization in Europe more ancient than that of Greece. Her visit to the pile dwellers was made about the middle of the sixth century before the birth of Christ. It was the rule among the ancient Frisians that, before a burgtmaagd could enter upon the duties of the office to which she had been elected, she must travel for a year. Upon her devolved the responsibility of teaching the maidens how to set to work when they went among the people, and naturally it was essential that she should be well acquainted with the country. It was during her tour of observation that Apollonia visited the pile dwellers.

"My journey," she writes, "was along the Rhine, on this side going up and on the other down. The higher I went, the poorer the people seemed to be. Everywhere about the Rhine the people dug holes, and the sand that was got out was poured with water over fleeces to get the gold; but the girls did not wear golden crowns of it. Formerly they were more numerous; but since we lost Schoonland (Scandinavia) they have gone up the mountains. There they dig ore and make iron. Above the Rhine, among the mountains, I have seen Marsaten. The Marsaten are people who live on the lakes. Their houses are built upon piles, for protection from the wild beasts and wicked people. There are wolves, bears, and horrible lions. Then come the Swetsar (Swiss), the nearest to the frontiers of the distant Krekalanders (Italian and Greeks), the followers of Kalta (Kelts), and the savage Twiskar (Germans), all greedy for robbery and booty. The Marsaten gain their livelihood by fishing and hunting. The skins are sewn together by the women, and prepared with birch bark. The small skins are as soft as a woman's skin. The burgtmaagd at Fryasburgt (Freiburg) told us that they were good, simple people; but if I had not heard her speak of them first, I should have thought they were not Frya's people (that is, white men), they looked so impudent. Their wool and herbs are bought by the Rhine people and taken to foreign countries by the ship captains. Along the other side of the Rhine, it was just the same as at Lydasburgt (Leyden). There was a great river or lake, and upon this lake also there were people living upon piles. But they were not Frya's people: they were black and brown men who had been employed as rowers to bring home the men who had been making foreign voyages, and they had to stay there till the fleet came home."

About two centuries and a half after Apollonia's visit, her descendant, Konerêd, added to the family record a history of Friso and his son Adel, in which another visit to the pile dwellers is mentioned. Hitherto Friso has been supposed to have been the founder of the Frisian race; but it appears that he only brought back to the ancient home of his family a colony of Frieslanders whose ancestors had traveled to the Far East about sixteen centuries before Christ, at a time when there was unbroken water communication between the Mediterranean and the Red Seas. The subsequent closing of the channel by an uplifting of the present isthmus during an earthquake is graphically described in the writings of Adela. Friso had been in the service of Alexander the Great, having built the conqueror's fleet on the Indus and brought it, under Nearchus, by way of the Red Sea to the Isthmus of Suez, over which the ships were drawn to the Mediterranean. He afterwards returned to Friesland with his followers, and was elected grevetman of the districts round Staveren.

When Friso's son Adel had finished his studies at the citadel of Texland, he was sent to travel through the States, accompanied by his wife Ifkja, a clever Frisian: this some time about the middle of the third century B. C., at which time the pile dwellers still inhabited the lakes among the mountains. Adel and his wife spent some time among them, not without great apprehension, for the plundering Twisklanders (Germans) were pressing hard upon them. On the return toward the lowlands, four servants of the party, who had loitered a little, were set upon and murdered by Twisklanders, who are described as banished and fugitive whites who had taken wives from among the Tartars, so called because they made war on everybody. They were all horsemen and bloodthirsty robbers, calling themselves Frijen or Franken. Hitherto the settlements on the Alpine lakes have been known only through their remains. The Paeonians, who inhabited Lake Prasias, as described by Herodotus (book V., chapter 16), were undoubtedly a branch of the same race; and his account tallies well not only with those of Adel and Konerêd Oera Linda, but also with the deductions of archæology. Herodotus, however, knew nothing of the existence of such a people so far to the west; consequently these descriptions, by contemporary writers so many centuries ago, are as valuable as they are interesting.

We may add that tribes living in a similar manner have been discovered in New Guinea, and very recently (by Lieutenant Cameron) in Central Africa.

THE NAVAL ENGINEER CORPS.

Many of our readers may not be aware that the usefulness of the United States Naval Academy at Annapolis has within the past few years been greatly extended by the addition of a thoroughly scientific and practical course of mechanical and marine engineering, and that the engineer corps of the navy is now mainly recruited from the graduates of the institution. The course of study for the cadet engineers comprises four academic years, during which time they are thoroughly instructed in designing, drawing, fabricating, and operating steam machinery, in mathematics, natural philosophy, and the English branches. Their physical culture is carefully attended to, the studies being varied by gymnastic exercises and infantry and artillery drills. The rank, pay, and position of the cadet engineers is the same as that of the cadet midshipmen, their courses of study being parallel. They are, however, appointed in a different manner. The cadet midshipmen, as is well known, are appointed on the nomination of senators and members of Congress. The cadet engineers are appointed from those passing the best competitive examinations. The positions are thus thrown open to those who can show themselves to be the best qualified to fill them, which is just as it should be.

Twenty-five appointments are allowed by law each year, and they are made in September, at the commencement of the academic year. The examination for entrance begins on September 5 next; and those wishing permits to be examined should apply soon to the Secretary of the Navy or the engineer in chief, by mail, for blank applications and pamphlets, containing full particulars as to the qualifications of candidates and the nature of the examination they are required to pass. Candidates must be from 16 to 20 years of age, and must have a fair education. They must send to the navy department, with their applications, certificates as to their good health and character, the dates of their birth, and information as to the educational advantages hitherto enjoyed. Candidates who receive permission must go to Annapolis at their own expense, and, if successful, must furnish themselves with an outfit of uniforms, clothing, and books, at a cost of $230. After admission to the Academy, the salary of the cadet is sufficient for all his necessary expenses, and he will receive from the government a thorough education at an institution which the last report of the Secretary of the Navy declares to be a "school of mechanical and marine engineering second to none in the world;" and on finally graduating he will be commissioned an assistant engineer in the navy.

THE SCIENCE OF CURRENCY.

A proposition has been sent to the Committee on Banking and Currency of the House of Representatives, suggesting that a committee of scientific experts be appointed, to enquire whether there is any science of money and currency, and if they find there is, to express the laws briefly and clearly; but if it shall appear that no such science is known, they shall endeavor to "evolve, discover, or create" such a science. Probably this plan will excite a general smile, for it is very hard to find a person who does not think that he knows all about such matters, and is only surprised that there are so many foolish people who will not agree with him. In spite of all this, however, it is impossible to resist the conviction that we are continually approaching the time when the affairs of this world will be conducted on scientific, that is, on common sense, principles. A good many persons are accustomed to think of scientists as theoretical dreamers, whose labors are of little or no practical importance; but no idea could be farther from the truth. A scientific man is one who is endeavoring to discover Nature's laws, and publish them for the guidance of mankind. The scientists hows us how to make the most of the resources placed at our disposal, how to increase the yield of our land, to reclaim deserts, to harness the physical forces, to avoid disease, to live more comfortably and securely.

In this country, we find ourselves at the present time in the hight of a conflict relating to the currency, and it seems to be entirely overlooked that the elaborate argumenst *pro* and *con* lack even the merit of originality, as they have been uttered scores of times in bygone years, and can be exhumed from the literature and official records of foreign countries. This sort of repetition becomes monotonous, after a while, to say nothing of the disastrous effects of an unsettled policy on the business interests of a country. Now that demagogues have had their say, it is time to call for the views of Science; and we hope the proposition will receive due consideration.

MILK AND ITS ADULTERATION.

When doctors disagree, who shall decide? New York city has been greatly exercised lately by a renewal of the discussion about the methods of detecting the fraudulent adulteration of milk. It was long since settled that water was the only substance employed for adulterating milk, and the question is narrowed down to the determination of the quantity of water added to this popular beverage. Dr. C. F. Chandler has appeared as the champion of the much abused lactometer, and Dr. R. O. Doremus as its chief opponent. The courts lean first one way and then the other, and the public are left as much in the fog as ever.

The question excites much interest, although, aside from its moral and economical aspect, it really does not deserve much attention Of course such a systematic course of