

Correspondence.

Poisonous Fish at Rotuma.

To the Editor of the Scientific American:

In the Jan. 2, 1886, number of your paper, I notice a letter from Mr. Robert S. Swanston, about poisonous fish in Rotuma or Rotuam. He states that "the fact was first noticed on the northwest side of the island, immediately after a hurricane," and that "the cause has gradually spread, moving east about," etc.

It is said by old fishermen that certain fish, sheep-head, for instance, will suck the moss, etc., from the copper-bound ships to an extent that the whole system will become impregnated with copper and the flesh become poisonous.

May it not be that a copper-bound vessel was wrecked on the northwest side of the island during the gale of 1884, and that the time taken for the spreading of the poison was only the time taken for the fish to find their way from the other parts of the island to this feeding ground?

CHAS. W. FORSTER.

Georgetown, S. C., March 1, 1886.

Light at the Bottom of the Sea.

To the Editor of the Scientific American:

After reading in your issue of January 30 the interesting article written by Ralph S. Tarr under the heading, "How the Ocean Bottom is Lighted," and believing it to be still an unsettled question whether there is light or total darkness at great depths, I have wondered if any of the deep sea explorers have tried photography. It could be easily arranged to lower photographic plates placed at different distances on the sounding or dredge line. If there is light, interesting impressions might be obtained. Certainly it would help to establish the fact of light or darkness. If this method has not been thought of or tried, let your paper suggest it, and some salt water philosopher will try it. A sheet of sensitized paper inclosed in a bottle with an outer removable cover would be very simple, but perhaps not the best, as many more delicate methods could be devised. I offer this simply as a suggestion.

C. MURRAY.

Springfield, Ill., February 2, 1886.

Diminished Rainfall.

To the Editor of the Scientific American:

Your recent editorial on the diminution of our average rainfall recalls statements made to me by the late Major Frank North, who had resided since childhood among the Pawnee Indians. They hold, it seems, a tradition that their ancestors came from the West, where they lived together in towns and cultivated the surrounding country. In time, however, they were compelled to leave their homes on account of a great drought, and migrated eastward. So great were their numbers that, in crossing the mountains, they wore deep trails in the rocky passes over which they journeyed.

The Pawnees boast that at one time they possessed a civilization equal to that of the white man. Major North stated that the sages who preserved these traditions could give no idea of the time of the migration, but from their accounts it must have been a long time prior to the conquest of Mexico by Cortez. One is forced to believe that drought and famine have been more powerful in depopulating the regions of the Colorado and Rio Grande than the marauding Apache or Ute.

IRVINE A. FORT.

North Platte, Neb., Feb. 15, 1886.

Crude Rock Oil for Keeping Steam Boilers Clean.

To the Editor of the Scientific American:

Crude rock oil, properly used, will keep a clean boiler. With any kind of water within reasonable fitness for use, it will keep it in excellent condition, and free from scale or moving sediment; but the crude rock oil will not do all this unless the proper amount of blowing off be done, for it will not compass the neglect of attendants. The proper way to use the crude oil is to send it into the boiler through the feed water, only once a day, and only in very small quantities. One-half an ounce per day will keep an ordinary tubular boiler of fifty horse power as clean as possible; and after a few months of regular use the shell will be found as smooth as a piece of japanned work, provided it was not pitted at the start, and the tubes will be perfectly clean and smooth. The oil must be introduced into hot water, and for some reason it does its work better under pressure. If any "constant feeding" of the oil into a boiler takes place, the fire seams will commence to leak, for this has been tried; there seems to be a call for only a small amount of the oil, and the small amount must not be exceeded.

Parties who have used this "crude oil" for four to six years have in some cases experimented with the amount, and in every case an excess of oil caused a leaking at the seams, while a small amount produced the most complete cleanliness and immunity from scale. In a large plant under the advisory charge of the writer, the use of the "crude oil" has proved that it would loosen the scale rapidly; and in the case of an

upright boiler, worked under one hundred pounds pressure, the scale became so rapidly freed from its hold on the tubes and firebox sides that a stop became necessary to clear out the leg of the boiler, and over five inches in depth of loosened scale was found in the water leg. In fourteen weeks another installment came out, and the coal consumed fell from 4,800 pounds to 3,200 pounds in the same time, the work done by the boiler being increased.

Some amusing instances might be related of putting in a "gallon of oil" at the cleaning of a boiler, on the supposition "it would last;" or of using tallow or sperm oil, or of some departure from the "crude rock oil," with a bare escape from serious consequences in two cases, and of "leaky boilers" in others.

"Crude rock oil" can be used in any boiler to advantage on the same principle as exemplified in the housewife's dinner pot—the oil or grease coats the surface of cast or wrought iron, and the pot becomes smoother than those not used for boiling greasy meats; but the steam boiler, under pressure and at a very much higher temperature, with a small amount of oil in motion through the circulation, becomes glazed, and being kept so by the minute particles of oil deposited, offers no chance for the scale to lay hold or to maintain a hold if one be acquired.

Many trials of crude oil in this way have been made in the New England States, especially in the large powers of cotton mills and manufacturing concerns, and its use is extending.

THOS. PRAY, JR.

Recent Decisions.

Liability of Cities.—In the case of the city of Henderson vs. Weisenberger et al., the Superior Court of Kentucky held that a city was not liable for injuries resulting from the falling of a billboard erected by the proprietor of a private lot and projecting over the line of his lot only the thickness of the board, unless the city had notice that the board was not securely fastened.

Contract with Municipality.—A contract entered into with a municipality, which provides for a certain mode of payment by the city, cannot be changed by subsequent legislation so as to authorize a performance different from that prescribed in the contract, and payments made in conformity with such subsequent legislation will not bind the contractor unless assented to by him. So held by the California Supreme Court in the case of McGee vs. City of San Jose.

Insurance.—An agent was employed to secure certain insurance, which he did. Afterward the insurance company gave notice to the agent of the cancellation of the policy. The general term of the New York Supreme Court held (Von Wien vs. the Scottish Union & National Insurance Company) that the notice so given was not notice to the insured, and that a clause in the policy to the effect that the insurance broker should be deemed to be the agent of the insured in any transaction relating to the insurance did not affect the question.

Right of State to Prevent Armed Assemblages.—A State of the Union has the right to prevent the armed assemblage of its citizens and their parading as military companies when not organized as such under the laws of the State or of the United States. So held by the Supreme Court of the United States in the case of Presser vs. the State of Illinois. To deny this right, in the opinion of the court, would be to deny the right to disperse assemblages organized for sedition and treason, and the right to suppress armed mobs, bent on riot and rapine.

Sale of Goods.—When a vender sells goods of a specified quality, but not in existence or ascertained, and undertakes to ship them to a distant buyer, when made or ascertained, and delivers them to the carrier for the purchaser, the latter is not bound to accept them without examination. The mere delivery of the goods by the vender to the carrier does not necessarily bind the vendee to accept them. On their arrival he has the right to inspect them to ascertain whether they conform to the contract, and the right to inspect implies the right to reject them if they are not of the quality required by the contract. Pope et al. vs. Allis, decided by the Supreme Court of the United States.

Right of Way.—A railroad company, in enforcing its right of way over the lands of others, and in constructing its road, is bound to leave the adjoining lands and fields which it crosses in the same condition as regards the facilities of cultivation and as concerns the utility of those lands to their owners as they were before the entry of the company. Hence a railroad company which constructs an embankment on the lands of a planter, and thereby stops up his ditches and other artificial drains, is responsible to such owner for all losses of crops and other damages occasioned by such interruption of his drainage. So held by the Supreme Court of Louisiana in the case of Payne vs. Morgan's Louisiana & Texas Railroad & Steamship Company, decided on the 5th January.

Trade Mark in Signs.—In the case of Sanders vs.

Jacob, decided lately by the St. Louis Court of Appeals, it appeared that in 1871 the plaintiff opened an office for the practice of dentistry in St. Louis, under the title of the "New York Dental Rooms." He advertised under that name, and had it registered. In 1880 the defendant opened a dental establishment two doors from that of the plaintiff, using a sign in size and style similar to the one used by the plaintiff, and bearing the inscription "Newark Dental Rooms." The plaintiff brought suit to enjoin the defendant from using this sign, alleging that it was devised to deceive his customers and deprive him of business. The court granted an injunction, holding that it was apparent that the defendant used the sign to deceive the public and to attract the customers of the plaintiff.

Perils of the Sea.—The case of Pandorf et al. vs. Hamilton, decided lately by Lord Justice Lopes, of the English Court of Appeal, arose upon an action brought by the plaintiffs, as owners of a cargo of rice shipped on board the defendant's ship, for damage to the same by sea water. It was admitted that the damage in question was caused by sea water passing through a hole in a pipe supplying the bath room, which pipe had been gnawed by rats. It was also found that the defendant had taken proper precautions to keep down rats during the voyage, and that they had not been brought on board by the shippers while shipping the rice. The rice was shipped under a bill of lading which excepted "all and every dangers and accidents of the seas." Lord Justice Lopes held that as the immediate cause of damage was the action of sea water, which was itself one of the causes contemplated as an exception, and as the effective cause was the gnawing of the rats, which was as much beyond human control as if the pipe had burst from frost, the whole occurrence must be regarded as a peril of the sea for which the defendant was not liable as a shipowner. There being no negligence on the part of the defendant in not keeping down the rats, such an event, the Lord Justice said, should be taken to be an unavoidable accident, of the same kind as if a swordfish had bored a hole and so let in the sea water.

—Bradstreet's.

Heat from Incandescent Lamps.

Herr Wilhelm Penkert, in the Zeitschrift für Elektrotechnik, gives the following results of his experiments to find the quantity of heat emitted by different lamps, incandescent and other, in an hour:

Incandescent Lamps:	Units of Heat.
Siemens and Halske.....	427
Edison.....	355
Swan.....	430
Bernstein.....	153
Gas:	
Siemens regenerative burner.....	1,500
Argand.....	4,860
Two hole burner.....	12,150
Petroleum:	
Round burner.....	3,360
Small flat burner.....	7,200
Solar Oil:	
Schuster and Bauer's lamp.....	3,360
Small flat burner.....	7,200
Rape oil:	
Carcel lamp.....	4,200
Reading lamp.....	6,800
Paraffine candles.....	9,200
Spermaceti.....	7,960
Wax.....	7,960
Stearine.....	8,940
Tallow.....	9,700

With regard to the value of the Bernstein lamp, M. Penkert thinks that it is possibly too low, owing to the fact that in the measurements losses of heat were not absolutely guarded against. The construction of the lamp was such that it could not be entirely immersed in the water employed to determine the heat given out.

New York Bricks.

The forty-five brick yards at Haverstraw, N. Y., on the Hudson River, 32 miles above New York city, the largest brick making center in the country, with a capacity for making 340,000,000 bricks annually, turned out 300,000,000 in 1885, against a like number in 1884. About 2,000 men are employed, besides 300 in the river carrying trade, which keeps 44 barges and 50 small vessels busy. Haverstraw bricks are of ordinary grade, but bring 25 to 50 cents per 1,000 more than other bricks of like quality, owing to the excellent sand and clay used. They brought an average of \$6 per 1,000 in New York last season, after paying \$1 river freight and \$1 to \$1.25 per 1,000 royalty to the owners of the land where the yards are located. The works use in a season 42,000 cords of wood for heating kilns, at \$5 per cord; 12,000 tons of coal dust, at \$2 per ton; and 4,000 tons of coal, at \$4.25 per ton; a total cost for fuel of \$251,000. The total royalties were, as above, say \$337,000, and wages (averaging \$2.25 per day), say (six months), about \$776,000. Two hundred patent brick-pressing machines, costing \$1,000 each, are employed. The total gross receipts last year are given at \$1,800,000. This particular industry began fifty years ago. At that time \$3 per 1,000 was a fair price. Quotations have been as high as \$9.

Discovery of a New Nebula by Photography.

MM. Paul and Prosper Henry have recently announced the discovery by means of photography of a new nebula in the Pleiades. It was first photographed on November 16 last, and, though it was again photographed on December 8 and 9, MM. Henry have as yet been unable to detect it by direct telescopic observation. The nebula is about 3' in extent and "tres-intense." It presents a well marked spiral form, and seems just to escape Maia. Its position is as follows: R. A. 3 h. 38 m. 57 s., Decl. 24° 1' N. The question is sometimes asked, Which is the most sensitive to light—the human eye or the photographic plate? This discovery seems to indicate the superior sensibility of the chemical plate.

DESIGN FOR A SUMMER GARDEN HOUSE.

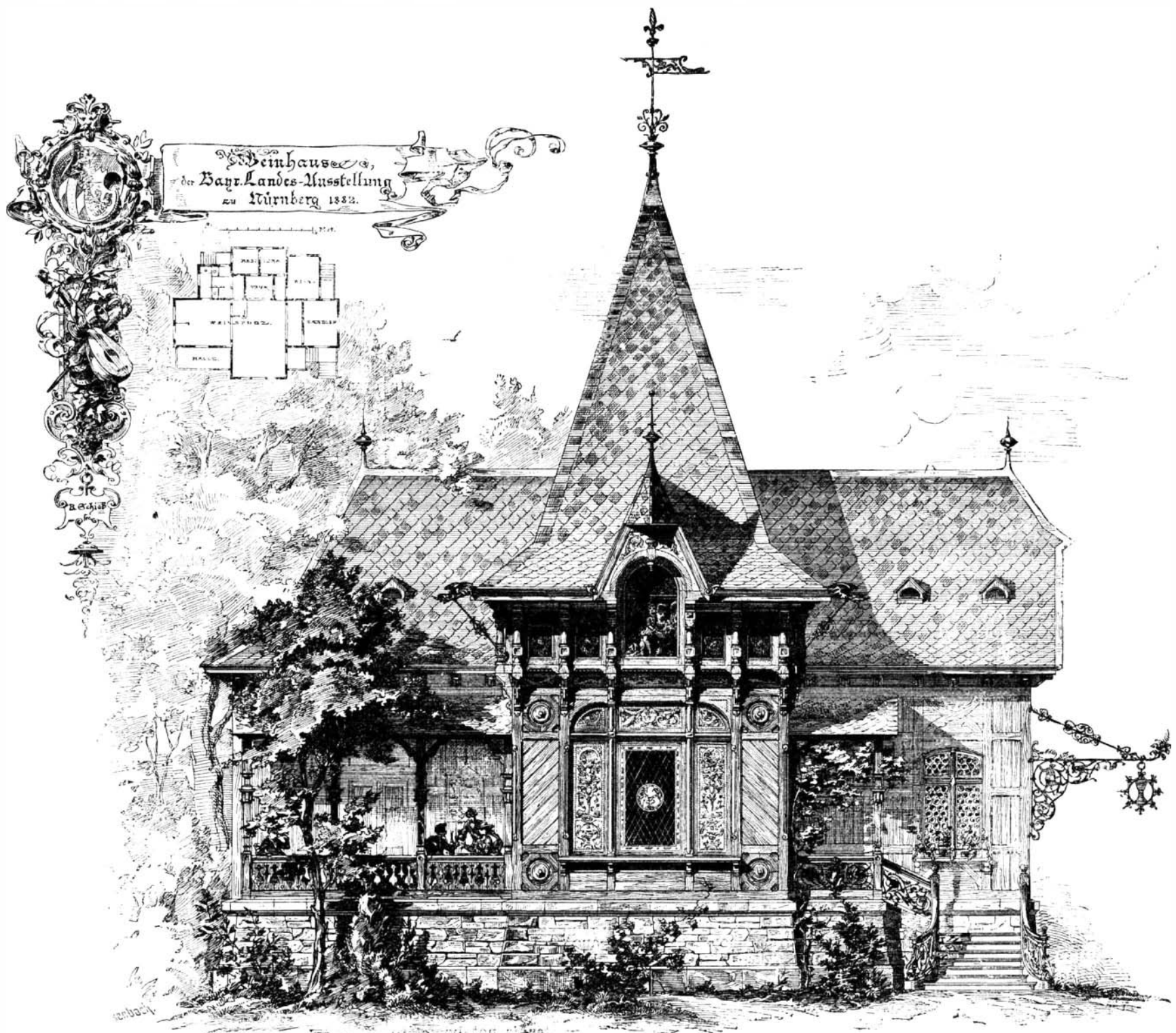
Our engraving, for which we are indebted to *Architektonische Rundschau*, illustrates a much admired

as a notable example of the complete carelessness possible in this direction, that the handsome residence of a neighbor got on fire three times within one month, and that on each occasion the narrowly escaped destruction was directly traceable to defective construction. In the first instance, fire was due to wood placed in connection with a steam boiler, and in the other two cases was caused by joists or beams brought in contact with chimneys when the house was built. In these cases sufficient heat reached the timbers to cause ignition.

There are many buildings in all parts of the country to-day where a little hotter fire than usual in furnace or grate will do just the same thing. Every householder should assure himself that no such danger menaces his own home or warehouse. Continued contact of wood with hot brickwork or heated currents of air will eventually cause combustion. There is but one remedy, and that is to remove the conditions. If a

were taken to avoid them. Now, however, they have been so well illustrated, together with the large possibilities of defectiveness in flues and chimneys, by a very complete list of catastrophes, that an intelligent builder—by which we mean not only the man who builds a house, but the man who has it built as well—must keep this experience in mind, and see that none of these fatal conditions is repeated in his own structure.

With twenty-seven recognized causes of fire, and any number besides, not classified, there are not a few otherwise careful persons who despair of the value of precautions, and trust the whole matter to fate and a heavy insurance. The wisdom of providing funds necessary for rebuilding is certainly commendable; but aside from any economic reasons why valuables should not be permitted to be thus quietly consumed, those who have gone through the ordeal of a fire, at either home or place of business, know that



DESIGN FOR SUMMER HOUSE.—BY PROF. C. SCHICK, KARLSRUHE.

design for a summer refreshment house or casino, by Professor C. Schick, of Karlsruhe.

The Origin of Fires.

In speaking of the origin of fires, Dr. Nichols states that present investigations show that the number of fires attributable to incendiarism is much less than is generally supposed. Spontaneous combustion is another cause which has heretofore been brought forward on a great many occasions, when the real trouble has been in defective or careless construction. While dwelling houses in the United States are burning at about the rate of one every hour, and mills, hotels, stores, and barns are vanishing in proportion, it is worth the consideration of every householder to know whether his own premises are inviting destruction from fire, or whether they are reasonably secure from the ruin brought by that element. In the fire tables of 1884, incendiarism is placed at the top of a list of some twenty-seven causes. Next in this fatal list comes defective flues, but it is questionable whether they have been given the rank they deserve. Dr. Nichols mentions

building is already erected, and these fire traps carefully concealed, it is a difficult matter to get at the source of danger and see that it is removed; but the difficulty is much less than that of starting anew when fire has carried off the household goods or destroyed the "plant" of a well established industry.

But while spontaneous combustion, being impersonal and therefore without the ability for defense, has had a great many sins laid to its door by builders whose volubility exceeded their carefulness, this peculiar process of slow oxidation has still a heavy account against it in the list of fire losses. In one instance, recalled by the same writer, a dwelling house caught fire by the spontaneous ignition of sawdust placed between kitchen floors as a sound deadener. The sawdust alone was safe enough, but when it became saturated with oil from the polishing of the floor above, new conditions prevailed. The sawdust heated rapidly from the absorption of oxygen by the oil. The temperature speedily rose to such a point that ignition occurred, and flame burst through into the room. For many years the conditions favorable to spontaneous combustion were so imperfectly known that no precautions

there are many things for the loss of which insurance is but a poor compensation.

Combustion of Copper and Nitrogen.

A curious phenomenon has been observed by M. Blondlot, and communicated to the French Academy of Sciences. A disk of platinum and a disk of copper, 0.03 meter in diameter, were fixed vertically in front of each other by help of two platinum stands. The disks were 3 or 4 millimeters apart, and both were placed inside a bell jar of porcelain, open below. The apparatus was then heated red hot for three hours, by means of a gas furnace, and although there was no electric current it was found that the face of the platinum disk was blackened with a deposit containing copper and platinum. In short, the copper had crossed from the copper plate to the platinum one. M. Blondlot, by repeating the experiment in different gas, found that the nitrogen of the air was the agent in this transport of matter. The nitrogen combines with the copper, and lodges on the platinum, either incorporating itself with the latter or decomposing in contact with it under the influence of its high temperature.