

these. he should, before making it on the map, make a careful estimate of its direction and distance relative to them, the distance being estimated as a fraction of that to Pollux or to Mercury, or to the zenith or horizon. All maps thus marked should be sent to the National Observatory at Washington.

Drawings of the corona surrounding the moon during the total eclipse made by such as are expert in sketching will be useful, if made as exact as possible. In doing this it will be necessary to distinguish between the real object and the rays surrounding it, which are the result of an optical illusion. It may be well to have a smoked or colored glass through which to study the object but it should not be too dark, or the details may be hidden.

NEW IRON FENCE.

Our engraving represents a new form of iron fence invented by Freeman R. Martin, of Brooklyn, Greene Co., Wis

The inventor states that the fence is not liable to injury by wind or frost, or by expansion or contraction by changes of temperature.

The posts are made from a bar of round iron, in which are formed three eyes for receiving the hooks that connect the barbed strips, and its lower end is flattened and bent at a right angle to give it a good bearing in the ground, and to prevent it from being raised by frost.

The fence strip is made of thin iron having diagonal slits cut in opposite edges, and the points thus made are bent alternately in opposite directions to form barbs. The double hooks which support the strips pass through the eyes in the posts, and are received in slots near the upper edges of the strips.

This arrangement, in connection with the wings that project from the lower edges of the strips, insures the turning of the strips under a heavy wind, so that the edges only are subjected to pressure.

At suitable distances the strips are provided with expansion joints, shown in Fig. 2, in which the spring keeps the strip taut when it is expanded, and permits of contraction without injury.

This invention was patented through the Scientific American Patent Agency, May 28, 1878.

M. FAYE has lately suggested a new mode of determining a ship's route at sea, namely, by means of the log. With the sextant the angle is taken which the cord of the log makes with the direction of the sun or a star, and thus the ship's direction is determined.

THE ADJUTANT.

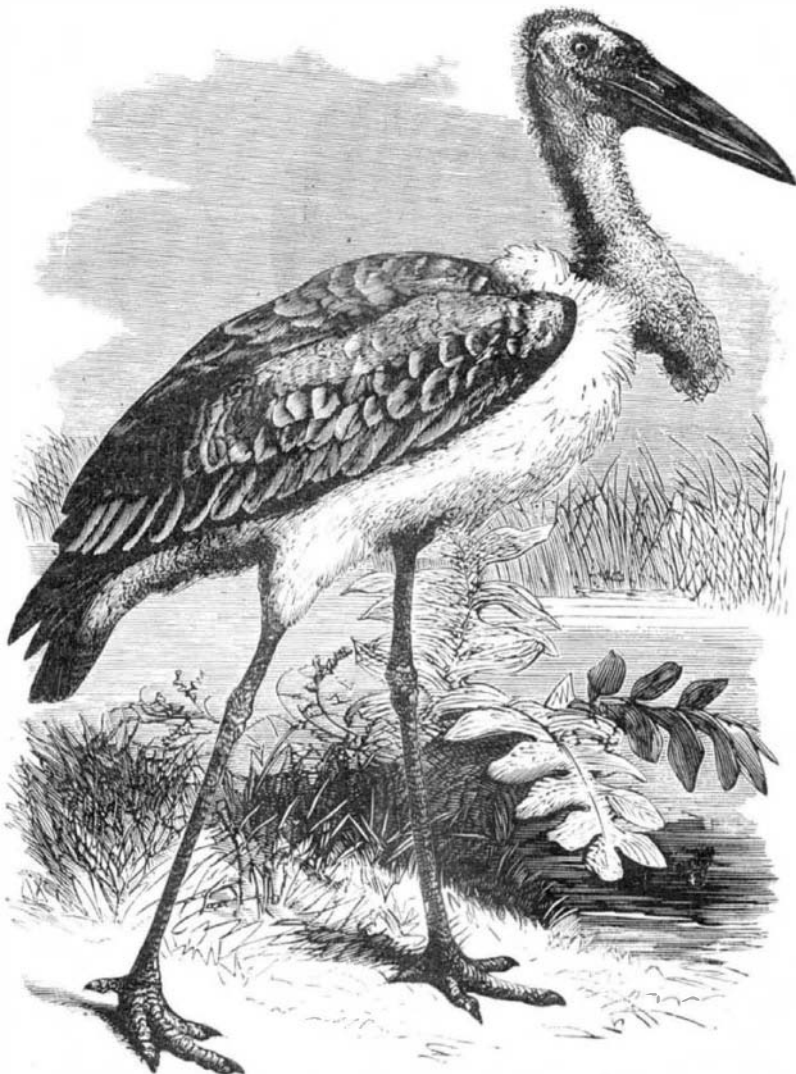
This fine bird is notable for the enormous size of the beak, which is capable of seizing and swallowing objects of considerable size—a full-grown cat, a fowl, or a leg of mutton being engulfed without any apparent difficulty.

The adjutant is a most useful bird in the countries which it inhabits, and it is protected with the utmost care, as it thoroughly cleans the streets of offal which would be left to putrefy but for the constant services of the adjutant and creatures of similar habits.

The attitudes assumed by the adjutant are varied and grotesque. It has a curious habit of airing itself on a hot day by standing with its huge beak drooping toward the ground and its wings stuck out straight from the body. Sometimes it squats on the ground with its legs tucked under its body, and sits with an air of dignity. Sometimes it stalks menacingly along, with its neck stretched to the utmost, its head thrust forward, and its huge bill open, looking a most formidable creature; but it is a cowardly bird, as it will run away from a child if boldly faced. It will, however, attack snakes, knocking them over before they can strike, and after battering them to death swallows them whole. During inundations the adjutant follows the course of the rising waters, and makes prey of the reptiles that are driven from their holes.

The capacity of the adjutant's stomach is enormous. It has the power of dissolving the soft and digestible parts and ejecting the indigestible, such as shells and bones. It is easily tamed, but is an incorrigible thief.

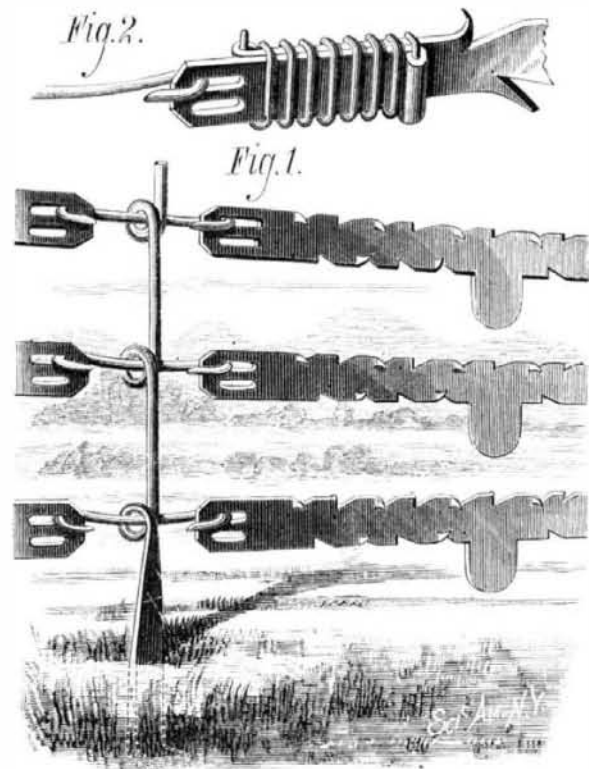
The exquisitely fine flowing plumes, the "marabou feathers," are obtained from the adjutant and a kindred species, the marabou of Africa. The general color of the adjutant is a delicate ashen gray above, and white beneath. The great head and proportionately large neck are almost bare of covering, having only a scanty supply of down instead of feathers. From the lower part of the neck hangs a kind of dewlap, which can be inflated at the will of the bird, but it generally hangs loose and flabby. We take our illustration from Wood's "Natural History."



THE ADJUTANT.

New Inventions.

J. Henry Potter, of East Bridgewater, Mass., has perfected and patented an improved Tremolo, for pipe or reed organs, which consists in a rotary valve placed in a chest connected with the main wind trunk and driven by a wind wheel placed outside of the chest, and supplied with wind from the trunk. It has a regulating valve for controlling the amount of wind supplied to the wind wheel, and a novel device whereby the effect of the tremolo may be delicately shaded so as to produce, with waves of the same length, a



MARTIN'S NEW IRON FENCE.

slight waver in tone, or the fullest and strongest effect, according to the requirements of the music to be rendered. Any desired effect may be had, varying from the fullest effect of the tremolo to the faintest perceptible undulation, which finally disappears in the plain tone of the pipe or pipes. The tremolo stop may be drawn without affecting the tone of the organ, or the stop may be left in, when the tremolo pedal may be moved without producing the tremolo effect. By this arrangement the swell and tremolo may be operated by the same pedal, and the swell effect will be produced in the tremolo as well as in the general tone of the organ.

Daniel James MacLean, of Reading, Pa., has devised an

improved Toy Bank, by which coins of any denomination or size may be deposited by means of a swinging figure, to the great amusement of children. A larger interior space is furnished than is generally the case in toy banks with figures.

An improved Metallic Horse Collar has been patented by Jesse C. Smith, of Centerville, Iowa. It is made of sheet zinc, pressed into shape, and strengthened with malleable iron stays, so formed as to also serve as a seat for the hames.

Ira Parke, of Mineral Point, Mo., has patented an improved Hive for Bees, which enables bees to be managed by inexperienced persons, and will enable the bee raiser to have his bees swarm or not. It will lessen the labor of the bees in removing refuse; it will admit of removing the best honey, and will resist wind, rain, and cold.

Edward G. Kearsing and Leonzo Kearsing, of Spring Valley, N. Y., have patented an improvement in Dental Gold Fillings. The gold is so prepared that it may be used in heavier masses than is practicable with gold prepared in the ordinary way, thus saving time and labor to the operator by shortening the tedious operation of filling teeth.

Cyrus M. Townsend, of Standing Rock, Dakota Ter., has recently patented an economical Device for Protecting those Surfaces of Leather Gloves, such as are used in husking corn or in any other kind of work, which are most exposed to wear, thereby rendering such gloves more durable than they would be without such protection.

An improved Condensing Vessel has been patented by Edward D. Bangs, of Galesburg, Ill. This invention relates to an improved condensing vessel or apparatus for extracting the entire strength from tea or coffee, and preserving also the aroma and flavor of the same, and for steeping, boiling, or cooking any substances whatever.

An improved Stove, for camp and other uses, that may be reduced to small and compact size for transportation, and readily put up for use, so as to be especially adapted for exploration parties and camp purposes, has been patented by Louis P. Völlbrecht, of Mason, Texas.

Charles Barlow, of Cookshire, Quebec, Canada, is the inventor of an improved Wash Bench, for supporting a wash tub and wringer. It is so constructed that it may be adjusted at different heights, and may be folded into compact form for convenience in storage and transportation.

An improved Stove Shelf has recently been patented by Geo. W. Robertson, of Peekskill, N. Y. It is designed to improve and render more convenient the ordinary cooking stove, and it consists in a novel device for attaching a shelf to the end of the stove.

Orson Colvin, of Schoolcraft, Mich., has patented an improvement in Beehives, which relates particularly to the form of the brood chamber and the comb guides or peak blocks secured at the top of said chamber. The lower portion of this improved hive contains the brood chamber, which has arc-shaped or concave sides. Having observed that bees tend to build their brood comb in an oval form, the inventor conceived the idea that a hive having concave sides or sides converging gradually toward the top, and having comb guides arranged at the top of the brood chamber, so as to connect the concave sides and span the space between them, would conform more to the instincts or natural tendencies of the bee, and result in an increased production of surplus honey. He states that upon practical test he found the theory correct, and the yield of surplus honey even greater than was anticipated.

Richard W. Riddle, of Minneapolis, Minn., has patented an improved Earth Closet, which consists in an endless apron carried by a movable frame, which is connected with the seat cover, so that it is moved forward when the cover is closed down, and is moved backward when the cover is raised. It has an arrangement of dogs or cams for clamping the apron and causing it to rotate when moved out or in, thus making two deposits of earth in the excrement receptacle as the seat cover is opened and closed.

An improved Bracelet Fastening has been patented by Leon Van Praag, of New York city, which consists of an elliptical band formed of a strip of spring metal, which may be of any desirable shape or configuration. To one of the ends of the strip of which the bracelet is formed, a concave plate is soldered, so that one half of it projects over the end of the strip. In the projecting portion of the concave plate, near its edge, there is a hole for receiving a hook that projects from the bracelet strip near its plain end. The bracelet is fastened by slipping the plain end under the concave plate, and inserting the hook in the hole. The bracelet may be easily fastened and unfastened by one hand.

An improved Grain Drier has been patented by Peter Provost, of Minneapolis, Minn. This invention relates to apparatus for dry-

ing wheat and other grain preparatory to grinding, and it consists of a drum having a double head in its upper end, and a head and discharge funnel at its lower end, and containing a number of vertical tubes, which run through both of the upper heads and also through the lower head.

George R. Stetson, of New Bedford, Mass., is the inventor of an improved Screw-cutting Die, which consists in a holder formed of a solid piece of metal, having a central aperture for receiving the article to be threaded, and slots for receiving the chasers or thread cutters, and having recesses for containing fastening plates, which engage grooves formed in the sides of the chasers.

Jordan Woods, of Glasgow, Mo., has patented an improved Tobacco Germer, which consists of a cap or shield provided with a projecting metallic nail or cutter, and jointed to a split ring. The device is to be worn on the thumb, and the artificial nail is to be used in the same manner as the natural thumb nail is used in removing germs or suckers from tobacco plants.

Benjamin M. Thomas, of Brooklyn, N. Y., has devised an improved Wrapper, by which needles are inclosed in a neat and convenient manner, the wrapper being readily opened for inspecting the needles without removing them therefrom, and quickly closed again, so that the needles may be conveniently shipped and handled.

An improved Bird Cage has been patented by Edward Weissenborn, of Hoboken, N. J. In this bird cage the upright bars are connected with each other and secured in their proper relative positions without the use of solder, and in such a way that they will be held firmly and securely in place, while at the same time having a neat and substantial appearance.

Wm. S. Hull, of Jackson, Miss., has patented a Flying Toy, which is an improvement upon the aerostat or flying toy for which letters patent were granted him May 8, 1877. The improvement consists in fastening one of the propellers to a tube, and the other to a stem revolving in bearings in said tube, connecting the stem and the tube by a torsional spring to give reverse motion to the propeller, and providing a spring catch mechanism for holding the device in check when wound up, until it is to be given to its flight.

William A. Abbott, of Westfield, Mass., has patented an improved Apparatus for Bundling Cigars, which will enable the work to be done much quicker than when done in the usual way, and produce neater and more uniform bundles. It will enable the bundles to be put up in solid metallic bands, and will give a taper to the ends of the bundles when desired.

Narcisse Pigeon, of Brooklyn, N. Y., has invented a new Process for Manufacturing Glucose, which consists in the following steps: First, slowly heating the corn mash to 185° Fah. or thereabout; second, adding a per cent of malt in the first stage of the process, before the temperature of the mash has reached 125°; third, adding another per cent of malt in the second or last stage of the process, that is to say, after the mash has cooled to 152° or thereabout; fourth, filtering the mash and concentrating the product by evaporation.

John J. Vincent and George B. McMillan, of Poy Sippi, Wis., has patented an improved Music Leaf Turner for pianos and organs, which consists of vertical jointed arms that are turned by separate pinion and sliding rack bar, and connected by spring clamps at the bottom and top of the sheet of music. Each upright arm is locked at the joint by means of a sliding sleeve of the lower clamp, for being retained in upright position or folded down for closing the piano or organ.

An improvement in Drive Well Point Filters has been patented by Martin J. Eich, of Plymouth, Ind. This filter is so constructed as not to interfere with or be injured by driving and turning the points. The filter consists of plates bent longitudinally into triangular form, placed side by side, and having their edges notched and soldered to the perforated tube.

Charles J. Schurheck and Charles A. Stevenson, of New York city, have invented an improved Loom Shuttle, which is provided with tension devices arranged to give a uniform tightness to the thread whatever part of the bobbin it may be unwinding form, and which is easily adjusted to give any desired strain to the thread.

A New Disinfectant.

Under this title, says the *British Medical Journal*, Dr. John Day, of Geelong, Australia, recommends for use in civil and military hospitals, and also for the purpose of destroying the poison germs of small pox, scarlet fever, and other infectious diseases, a disinfectant ingeniously composed of one part of rectified oil of turpentine and seven parts of benzine, with the addition of five drops of oil of verbena to each ounce. Its purifying and disinfecting properties are due to the power which is possessed by each of its ingredients, of absorbing atmospheric oxygen, and converting it into peroxide of hydrogen—a highly active oxidizing agent, and very similar in its nature to ozone. Articles of clothing, furniture, wall paper, carpeting, books, newspapers, letters, etc., may be perfectly saturated with it without receiving the slightest injury; and when it has been once freely applied to any rough or porous surface, its action will be persistent for an almost indefinite period. This may, at any time, be readily shown by pouring a few drops of a solution of iodide of potassium over the material which has been disinfected, when the peroxide of hydrogen which is being continually generated within it will quickly liberate the

iodine from its combination with the potassium, and give rise to dark brown stains.

ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, July 27, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

PLANETS.

Venus rises.....	H.M. 2 27 mo.	Saturn rises.....	H.M. 9 53 eve.
Mars sets.....	8 11 eve.	Saturn in meridian.....	3 54 mo.
Jupiter rises.....	7 09 eve.	Uranus sets.....	8 26 eve.
Jupiter in meridian.....	11 45 eve.	Neptune rises.....	11 22 eve.

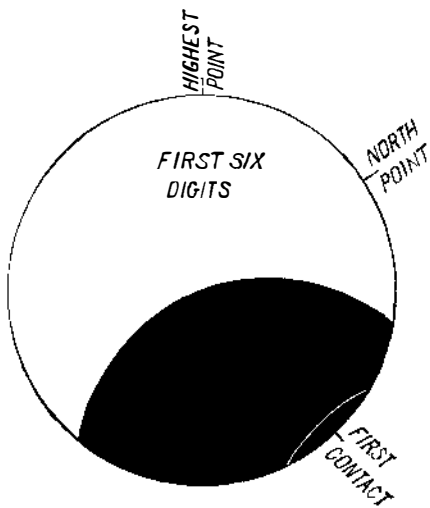
FIRST MAGNITUDE STARS.

Alpheratz rises.....	H.M. 7 49 eve.	Regulus sets.....	8 24 eve.
Algol (var.) rises.....	9 29 eve.	Spica in meridian.....	4 57 eve.
7 stars (Pleiades) rise.....	11 48 eve.	Arcturus in meridian.....	5 48 eve.
Aldebaran rises.....	1 12 mo.	Antares in meridian.....	8 00 eve.
Capella rises.....	10 35 eve.	Vega in meridian.....	10 10 eve.
Rigel rises.....	3 18 mo.	Altair in meridian.....	11 22 eve.
Betelgeuse rises.....	3 04 mo.	Deneb in meridian.....	0 18 mo.
Sirius.....	invisible.	Fomalhaut rises.....	10 29 eve.
Procyon.....	invisible.		

REMARKS.

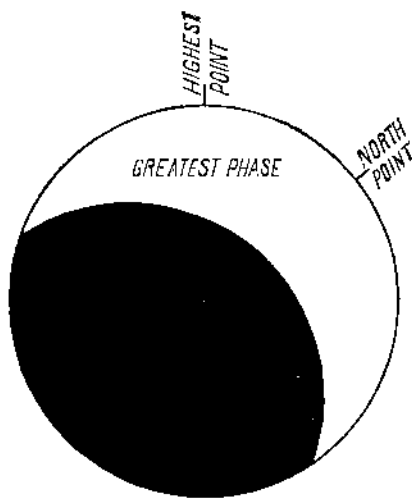
Venus is near the moon this date at 4h. 9m. A.M., being about 5° south. Mars is near the moon July 30, being about 2° north. Jupiter is in opposition, that is, 180° east or west of the sun, July 25.

The following engravings of the phases of the eclipse,

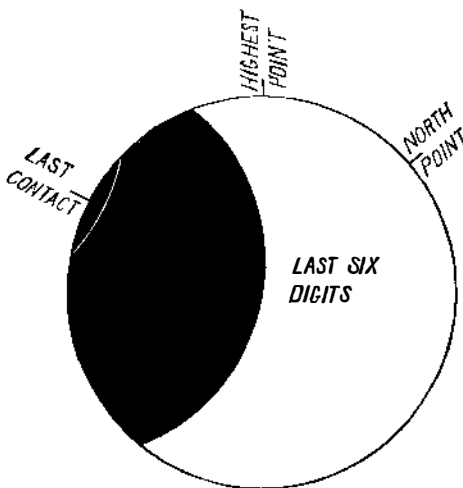


July 29, represent the general appearance in the Middle and Northern States.

The sun will be totally eclipsed July 29, in the afternoon, and will be visible generally throughout the United States as a partial eclipse. The line of central eclipse—the region



over which the center of the shadow passes—begins in central Asia, Lat. 55° N., Long. 165° W. of Washington, and crosses Behring Strait into Alaska at 65° N. Lat., taking a southeasterly course through British America and the United States. The total phase will be observed from various points along the route of the Union Pacific Railroad. Sherman



station and Ogden have been selected as points of observation because of their great elevation, thus avoiding the denser portion of the atmosphere. By this means the distinguishing properties of instruments is increased, and con-

sequently a much higher power can be used than would otherwise be possible and give good results. Near Denver the total occurs at 3h. 27m. P.M., local mean time, with a magnitude of 12.1 digits. The line of totality leaves the United States near Galveston, where a total phase occurs at 4h. 30m. P.M., local mean time, passing across the Gulf of Mexico and the western extremity of Cuba, giving a total phase at Havana at 5h. 34m. P.M., ending in the Caribbean Sea just off the southeast shore of the island of St. Domingo, where the total occurs at sunset. At New York city the eclipse begins at 4h. 42m. P.M.; middle, 5h. 35m. P.M.; end, 6h. 28m. P.M. Size 7.8 digits upon the sun's southern limb.

THE CURIOSITIES OF TOBACCO.

The passion for rare collections is curiously exemplified in the instance of a gentleman residing in Birmingham, England, who has traveled extensively, and has for years devoted much time and money in obtaining from every part of the world all kinds of tobacco and preparations of tobacco, pipes of every nation and tribe, snuff boxes and bottles, and a large library—shelves and floors piled up with books—containing all that has been written and published in favor of or against the use of the weed, from King James' "Counterblast" to Trask's pamphlets, and whatever else there may be. The variety of his acquisitions is constantly increasing, until now his collection is not only of great intrinsic value, but a wonder and delight to those possessing taste for rare and exquisite work and curious designs. There is scarcely a tribe in Africa or America or a solitary island of the ocean that has not contributed something of its handiwork to this collection in the shape of pipes—demonstrating the temporal consolation and refuge of men—some of them of strange, uncouth shapes and workmanship, and others giving evidence of good advance in artistic taste and skill.

Those from China and Japan, however (including opium pipes), with their profuse and exquisite ornamentation in gold, silver, and enamel, are the gems of this part of the collection; while of every style of earthen pipe, from the first rude clay to the finest and most beautifully decorated porcelain, his cabinet contains one or more specimens, by which is indicated, as well perhaps as by a collection of old china and porcelain, the progress of the ceramic art.

But the most beautiful and costly of his treasures are the superb antique snuff bottles, numbering several hundreds, mostly of Chinese and Japanese manufacture, and in form generally a flattened oval of from 1½ to 2 inches across, and from 2½ to 3½ inches long, with caps or stoppers having a small spoon attached with which to withdraw the snuff and apply it to the nostrils.

Those of gold and silver, though in many instances wrought with all the fancy and skill imaginable, are of less intrinsic or artistic value than are many of the others. Here are some of carved jadestone, others of carnelian, others of beautiful agates, and next one of the larger size fashioned from a single sapphire; and here are several of the purest rock crystal, cut and polished as clearly on the inside as on the outside; but the jewels of the collection are those of opaque glass, made apparently by the imposition of a layer of one brilliant color over another—in some cases there are three or more layers—and ornamented with designs cut through to the innermost one, after the manner of cameo cutting.

In most instances these bottles bear dates and monograms, which enable one who has thoroughly studied them, as has this gentleman, to trace the progress of the art through centuries.

It is impossible in this article to give more than an idea of this collection, but its owner is preparing a descriptive and illustrated catalogue of it, the drawings and coloring being done by students of the Sheffield School of Design, of which he was founder and president, which will be in itself a work of art and a valuable addition to any library.

PRESERVING FISH BY HYDRAULIC PRESSURE.

According to the *Fishing Gazette*, Mr. Johannes Eckart, of Munich, claims to have discovered a method of keeping fish perfectly fresh for many days after capture. His plan of procedure consists in impregnating them, by means of hydraulic pressure, with a weak solution of salicylic acid, packing them in casks or cases, and pouring gelatine over them. The latter serves to prevent them from becoming stiff and dry. Prepared and packed in this manner they may, it is said, remain from ten to fifteen days, and even longer, en route, without detriment to their flavor or appearance. Mr. Roosen, of Hamburg, who is turning this new system of preservation to practical account, has received the most satisfactory reports respecting his consignments of fresh and salt water fish to distant countries. Trout caught near Munich, and treated according to Eckart's plan, arrived, it appears, at Bergen, in Norway, and in New York in a perfectly fresh state; and sea fish dispatched from Ring kjöbing, in Denmark, to Dresden, Leipsic, and other inland German towns, have found such favor as to encourage several Consumvereine to give orders for weekly deliveries. Sample consignments have also been made to England, and Mr. Roosen proposes to arrange for regularly supplying the London market. As one of Eckart's patent impregnating machines, large enough to hold 400 pounds of fish, will prepare some 8,000 pounds a day, a considerable amount of piscine produce can thus be quickly preserved for dispatch to any destination; and, since ice is altogether dispensed with, and no necessity exists for sending the fish by fast trains, the cost of transport is of course greatly reduced.