

attached about a yard of India-rubber tubing communicating with a vessel placed above, containing distilled water, the pressure of a column of water being thus obtained. The India-rubber tube being filled with water and adjusted to the percolator, the wire clamp attached to the lower portion of the tube is removed, when a slow and steady flow of water commences; after the lapse of an hour and a half, sufficient displacement will have been effected, the water having risen considerably above the marc, and with it will have been removed the retained tincture, which forms a dense stratum upon its surface. On dipping a glass rod to this upper stratum and applying it to a flame, the disengaged tincture burns nearly as readily as the percolated portion, indicating its comparative strength of spirit. Nevertheless, diffusion will have taken place to a slight extent, and is perceptible by the gradual shading off of the highly colored tincture into the water beneath it. To finish the tincture, its measure was brought up to 19½ ounces, the addition of the requisite quantity of surface liquid on the percolator, the product filtered, and made up to a pint with proof spirit. Thus having measured the product of percolation, I know exactly how much surface liquid to draw off to bring the measure up to 19½ ounces, which is done by means of a glass siphon, and having mixed the two products, filtered by the automatic method through thin 3-inch paper, and made up to a pint with proof spirit, have produced a tincture prepared at a comparatively small loss. —*Pharm. Journal.*

Large Yields of Grapes.

The vineyards of the Napa Valley, California, averaged the last year about eight tons of grapes to the acre. In one instance three acres of Malvoisies yielded ten tons to the acre. The grapes were sold for \$25 a ton. Twenty-eight acres in San Joaquin County produced 300 tons of grapes, two sorts, Mission and Black Prince, the average price which was \$27 a ton. Choice grapes grown on mountain sides brought \$30 a ton. In both these cases the vines are old. A yield of ten tons to the acre from three-year-old Sultana vines is reported in one instance in Solano County. The Sultana is a seedless grape, in high repute for winemaking.

ANOTHER BRUSSELS EXHIBITION.—It is stated that in consequence of the great success of the Belgian National Exhibition, two projects are now under discussion—one for holding at Brussels in 1883 or 1884 a Universal International Exhibition, and the other for organizing a Universal International Educational Exhibition.

NOVEL STEAM BOILER.

The special feature of the new boiler shown in the accompanying engraving consists in the transverse water tube in the fire box. Its obvious effect is to aid materially the raising of steam of high pressure in a short time. The boiler may be set vertical or inclined, the latter position being preferred. This boiler is the invention of H. Berchtold, of Zurich, Switzerland. The illustration is from the *Allgemeine Zeitschrift für Textil-Industrie*.

MECHANICAL INVENTIONS.

Mr. John F. Garatt, of Spencer, N. Y., has patented an improved windmill, so constructed as to adjust itself to the force of the wind, the automatic adjustment being effected by two weights at diametrically opposite sides of the wheel which are acted on by centrifugal force.

Mr. Gavin Telfer, of Detroit, Mich., has patented a combined hammer and screw-driver which is simple and convenient. It consists of a hammer containing an adjustable screw-driver in the lower end of its hollow handle.

An improved sash lift and automatic sash lock, which locks the sash automatically as soon as the same has been lowered to rest on the sill, but unlocks it as soon as pressure is applied to the lift for the purpose of raising the sash, has been patented by Mr. William W. Sweetland, of Edwardsburg, Mich.

An automatic attachment to lathes for cutting rubber and other rings has been patented by Mr. Joseph T. Ridgway, of Trenton, N. J. The object of this invention is to make the lathe work more quickly and accurately by substituting automatic mechanism for mechanism operated by hand, thereby increasing and improving the product of the lathe and diminishing the cost of the product.

An improved water and steam wheel has been patented by Mr. Thomas R. Simmons, of Houma, La. The inventor uses a wheel that consists of a hub provided with wings that extend to an outer inclosing cylinder, the wheel being fitted to a shaft contained in a chamber through which the fluid passes.

Messrs. T. H. Scott, A. G. De Pontee, and H. E. Wyman, Crown Point Center, N. Y., have patented a machine for cutting wood fiber for paper pulp. The invention consists of a novel knife and the combination thereof with a revolving head for cutting wood fiber to be used in making paper pulp.

An improved electric alarm, which is designed to be set off to give a continuous warning by the breaking of an electric circuit, has been patented by Mr. Lambert F. Fouts, of Greenfield, Iowa.

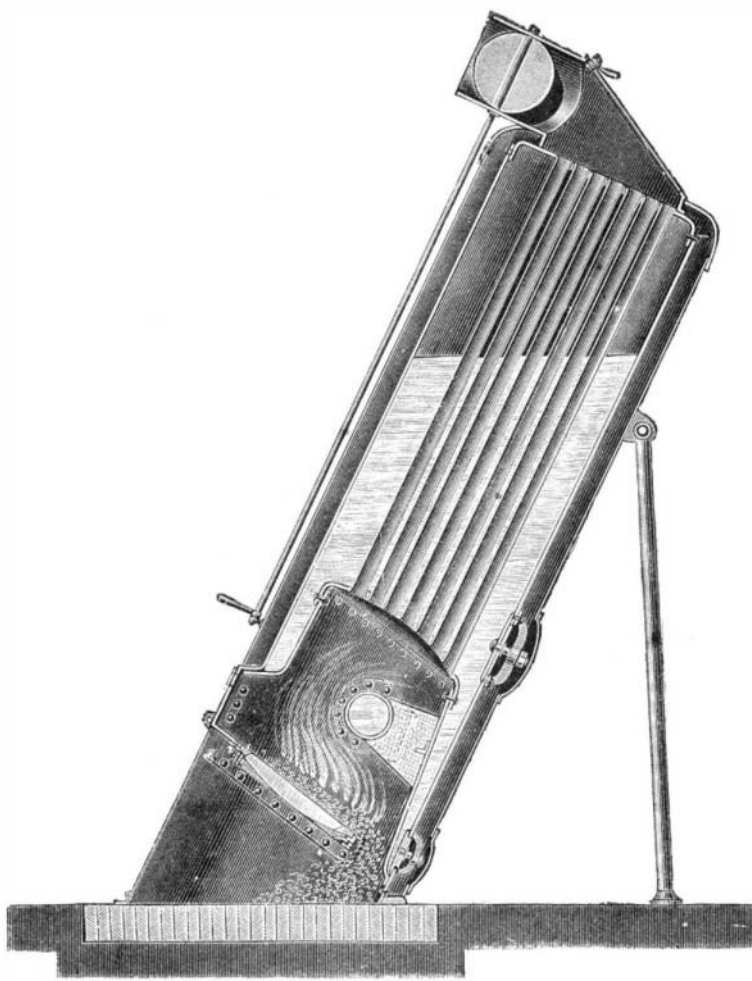
BOTTLE COCK FOR EFFERVESCING LIQUIDS.

In using aerated water, champagne, or other effervescing liquids, especially in sick rooms where small quantities are



IMPROVED BOTTLE COCK FOR EFFERVESCING LIQUIDS.

required in frequently repeated doses, it is undesirable to open a fresh bottle every time, and quite impossible to preserve for any length of time the briskness of an opened bottle. To meet such cases the simple apparatus shown in the annexed engraving has been devised. It consists of a hollow corkscrew mounted upon a little stand, and so arranged that the outlet may be opened by a slight pressure on a lever. The corkscrew is passed through the cork and the



NOVEL STEAM BOILER.

bottle inverted on the stand. The pressure of the gas in the bottle insures the delivery of the liquid, and none of the gas can escape until the liquid is all drawn off. Thus the effervescent quality of the wine or water is preserved to the end no matter how slowly the liquid may be used. Obviously the device is also serviceable in saving the trouble and waste incident to the common method of uncorking bottled liquids of this character.

RECENT INVENTIONS.

Mr. William C. Beattie, of Taunton, Mass., has patented an improvement in butter dishes, which is applicable to all kinds of analogous covered dishes, such as pickle casters, jewel cases, sugar dishes, baking dishes, etc. The object of the invention is to provide a neat and tasteful means for raising and suspending the cover in elevated position above the dish.

In an improved boot heel, patented by Messrs. Riley D. Plunkett and Jason P. Rollins, of Little Rock, Ark., the heel is made detachable and attachable. Both the sole and heel have heel plates, which connect by dovetail tongue and groove, and are maintained in mutual engagement by a single screw.

An improved gatherer and ruffler for sewing machines has been patented by Mr. James B. Farrar, of Wilmington, N. C. It gathers a piece of fabric either at its edges or throughout its entire surface, or will gather or shirr a piece of fabric on a ground work, or gather one piece of fabric to another, and at the same time attach a ribbon, tape, or braid, at the seam, all in a single operation.

Egyptian Obelisks.

There are thirty of them at the present time scattered over Europe. Rome has eleven, four of which are higher than our New York obelisk. The highest of the Roman obelisks, which is also the highest in Europe, stands before the Church of St. John Lateran. The obelisk in the piazza of St. Peter's is 82 feet 9 inches high. Both of these were mounted on high pedestals. The pedestal of the St. John Lateran obelisk is 44 feet high, making the entire height of obelisk and pedestal 150 feet. The pedestal of the St. Peter's obelisk is a trifle less than 50 feet high, making the whole height of the monument 132 feet 2 inches.

The Egyptian Obelisk now in New York.

At a recent meeting of the New York branch of the United States Naval Institute, held at the Brooklyn Navy Yard, Lieutenant Commander Gorringer described the means employed to remove the obelisk from its site in Alexandria to the United States. His remarks were illustrated by models. The obelisk was buried, he said, to a height of nine feet above the pedestal in a mass of debris and sand. The age of obelisks can be determined with considerable accuracy by the depth of the surrounding accumulations. There were two plans to choose from in removing the obelisk from its upright position. One was by securing the segment of a huge wheel to the obelisk, with two guys fastened to the shaft behind. Then the obelisk would be tilted so as to throw the weight on the guys, and excavations being carried on under the base it would slowly turn over. This was the simplest plan, but as the nature of the ground was unknown, and as rocks would very likely render the excavation

difficult or impossible, the idea was adopted of mounting the obelisk like a cannon upon a kind of gun carriage. This carriage was made in Trenton and taken to Egypt in pieces. The obelisk was carefully incased in timber, and four derricks were erected. The iron plates of the trunnions, weighing six tons each, were hoisted into place on the sides of the obelisk and bolted together by bars running across, being also supported by rods running up and down. Then the carriage was placed underneath, and the trunnions just fitted into the rests on the carriage. The different parts were securely fastened by bolts, then the obelisk was lifted bodily and turned over of its own weight. Trusses were placed on each side, with steel bands running to the heel and end of the shaft, in order to keep the obelisk from breaking in two when suspended by the middle. It was top-heavy, the part above the trunnions weighing four tons more than that below, and therefore came down upon the high cradle prepared for it with a tremendous crash. Some of the timbers were broken, but special preparation had been made for this, and a kind of cushion of timbers was ready to receive the shaft.

Stacks of timbers were placed under the obelisk. When it was recumbent it was lifted by hydraulic jacks, and the timbers were taken out one by one until it was lowered to the level of the pedestal. A deep pit or canal had been dug underneath, and a huge box or caisson was in readiness large enough to float the obelisk out to sea. Here a mishap occurred which has been wrongly said to have been maliciously caused. The caisson had to go 210 feet to reach the sea. It went 20 feet and then stopped. For the remainder of the way it had to be pushed by a pressure of 120 tons inch by inch to the sea. Afterward it was found that between the ways and the cradle were several pieces of iron and

stones, which probably found their way in accidentally. The sea was very rough, and once the obelisk was sunk, but it was finally towed seven miles and put in a dry dock. It was laid diagonally to the keel of the ship, in the side of which a large port had been opened. By the aid of a kind of railway formed of 6 inch channel iron and 5½ inch cannon balls the obelisk was moved forward, being turned when half way into the ship so as to go parallel with the keel, and

it finally lay upon a bed on the very top of the keel. Then the port was closed up. The weather was good except for three days of the voyage. No danger at all was apprehended; in fact Mr. Gorringer considered that such a rigid body rather strengthened the ship.

NEW INVENTIONS.

An improvement in mowers has been patented by Mr. Peter P. Coler, of Clyman, Wis. The object of this invention is to furnish mowers so constructed that they may be readily adjusted as front cut or rear cut machines.

A vehicle spring, patented by Mr. Fred. Schelp, Jr., of Baldwin, Mo., consists in the combination with the side-bars and cross-springs of a side-bar wagon of a median longitudinal spring passing under the front and rear axles, and connected with the body by stay-rods, whereby a more elastic, easier running, and stronger spring gear is secured.

An apparently important improvement in well-boring apparatus has been patented by Mr. Edgar P. Watrous, of Moravia, N. Y. The invention relates to wells which are formed by sinking metal tubes. The tube is provided with a cutting edge at the lower extremity, and is made to penetrate the earth by rotation on its vertical axis, being fed to its work by means of a screw-feeding arrangement. The rotation is accomplished by a hollow crank joined to the top of a tube section through which water is forced, the water being discharged from the upper part of the tube section, to which is attached a small chamber and spout.

In a machine for packing bran, patented by Wm. L. Williams, of San Diego, Cal., a series of stamps are fitted within a vertical cylinder in which they are reciprocated, while at the same time the entire series is revolved on its vertical axis to pack the bran in a bag attached to the lower end of the cylinder which is open. The bran is fed to the bag through a feed-pipe obliquely joining the side of the cylinder.

By novel and very simple details of construction a reclining chair, patented by Mr. Phillip Herbold, of Galion, Ohio, may be adjusted in different positions.

An improved aerial apparatus has been patented by Mr. Frederick W. Brearey, of Maidenstone Hill, Blackheath, London, Secretary of the Aeronautical Society of Great Britain. The inventor makes use of a vessel or apparatus the body of which is long and narrow, with tapering ends, and of the greatest sectional area at or near the center of gravity, in order to present the least possible resistance to the air, and at the same time furnish suitable space for containing the motive power and other requisite machinery and also accommodation for passengers. Two or more lever arms are attached and jointed to the longitudinal body at or near the front thereof, and the said arms are vibrated by suitable power, and give motion to flexible fabric, whereby the apparatus is sustained and propelled. Mr. John F. Mackenzie, of 16 Hawley street, Boston, Mass., represents this invention in the United States.

In a speaking-tube, mouth-piece, and bell-lever patented by Mr. William R. Ostrander, of New York city, speaking-tubes and bell-levers for operating bell wires are combined in one apparatus, which effects economy in construction and convenience in use. The bell lever is pivoted on the mouth-piece, and both are secured to the wall by a single attachment.

Mr. William Winegar, of Chambersburg, Ill., has patented an invention which avoids the necessity of special supports for the wheels of grain drills, and provides that each wheel shall maintain a constant position relative to the bottom of its tooth for all changes in the position of the tooth by an automatic adjustment. He combines with the hollow drill tooth a pronged wheel attached directly to the side of the tooth and carried by the latter, which clears the drill teeth of straw or other obstructions instead of arranging such wheel between the teeth of the drill as has heretofore been done.

Correspondence.

A Remarkably Brilliant Meteor, as Seen at Bloomington, Ind., December 30, from 8 o'clock to 11 o'clock.

The night of the 29th and 30th was very cold (-15° by Six's thermometer) and windy. The thermometer at 8 o'clock A. M. -6° . The sky slightly hazy.

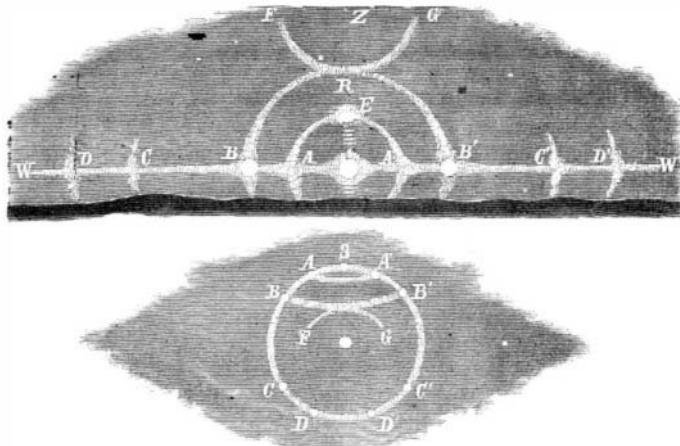
The mock suns, A, A¹, were very large and bright, rivaling the sun in splendor, and they cast into the room well defined shadows, and their light on the wall was rather yellowish compared with the white light of the sun. These parhelia were at the intersection of the inner halo, A E A¹, and the horizontal circle, W W. This halo was very distinct, somewhat brighter at its summit, E, than on each side of it. The diameter of the inner halo, as roughly estimated from the shadows cast by the sun and one of the parhelia, was 42° or 43° . The second halo, B R B¹, was not so bright; it was surmounted by a brilliant colored arc of about 120° , with its convexity toward the sun. We could easily distinguish the red, orange, yellow, and blue colors. The center of this arc was in the zenith. The parhelia at the intersection of this halo and the horizontal circle were perfectly distinct—as bright as those usually seen on the inner halo. The parhelia, C C¹, were perfectly white and somewhat fluctuating, C¹ the brighter of the two. D and D¹ were

mere blurred and faint patches of light, apparently about as far from a point diametrically opposite the sun, as A and A¹ were from the sun. The cross in the inner halo, as represented in the figure, added much to the beauty of the phenomenon. The haloes were seen till nearly noon, when they disappeared, then they appeared again between 2 and 3 o'clock P. M., nearly as splendid as in the morning, but lasting only a short time.

T. A. WYLIE.

Bloomington, Ind., Dec. 30, 1880.

[In addition to the above, we have received letters and sketches from other correspondents widely separated from Mr. Wylie and from each other, who observed this splendid



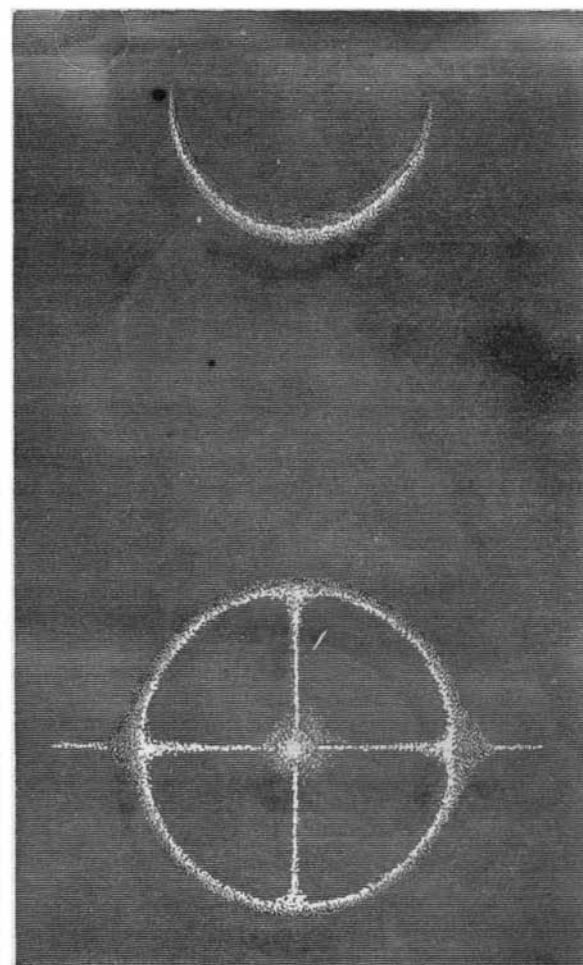
METEOR SEEN AT BLOOMINGTON, DEC. 30, 1880.

phenomenon. Mr. J. Mahr, of Suel, Minn., saw it first at noon, and says it was visible throughout the greater portion of the afternoon. Mr. C. Petri, of Hannibal, Mo., saw it. Rev. W. M. Richards, of Berlin, Wis., writes that he observed a similar phenomenon on the 26th ultimo, which surpassed anything he ever witnessed of the same nature; and to assure us of the correctness of his dates has written a second letter stating that the display observed by him should not be confounded with that seen on the 30th ultimo.]

The Parhelia.

To the Editor of the Scientific American:

On the morning of the 30th ult., at about 10 A. M., a very beautiful atmospheric phenomenon was observed at this



PARHELIA AS SEEN AT JERSEYVILLE, ILL.

place, such as I never before witnessed, or ever found wholly described in any written work on the subject. I made a sketch of it on the spot, as faithfully as possible, and herewith send you a rough though true copy thereof, the relative dimensions and distances being preserved as correctly as possible. The night preceding was intensely cold, the mercury falling to 20° below zero.

There appeared, at the hour above stated, two very brilliant mock suns intersected by a well defined, slightly iris colored, bright circle, having the sun at its center. This circle was divided into quadrants by four brilliant rays of white light, radiating apparently from the sun, two horizontally and two vertically; the horizontal rays intersecting the mock suns, and extending some distance beyond, as shown in the diagram.

The most remarkable part of this interesting phenomenon was the appearance of a brilliant inverted crescent near the zenith, subtending from cusp to cusp an angle of about 14° . The colors were disposed in prismatic order and as brilliant as those of the most beautiful rainbow I ever saw; the red outside, toward the sun; the violet inside. The mock suns were also strongly tinged with red on that side farthest from the sun.

This beautiful celestial spectacle, which almost every one turned out to see, reached its maximum brilliancy about noon, and gradually disappeared about 3 P. M.

I am aware that the crossed circle and mock suns are not new, for I remember having noticed a description of an appearance of this kind in either the SCIENTIFIC AMERICAN or its SUPPLEMENT, some years ago, but the beautiful and brilliantly colored crescent that so much enhanced the splendor of the spectacle is, to me, new.

I should be pleased to know whether this phenomenon was seen from other places, and whether the like has been before observed.

F. S. DAVENPORT.

Jerseyville, Ill., January 1, 1881.

Magnificent Parhelia.

To the Editor of the Scientific American:

At about 10 o'clock this forenoon quite a number of our citizens observed a very strange, magnificently grand spectacle, never before seen by any of the spectators. It consisted of two mock suns, an arc of a rainbow inverted, and a halo of wonderful beauty.

The wind last night was nearly northwest. Yesterday morning the thermometer indicated 25° below zero, and averaged 15° all day yesterday; to-day, at the time of seeing the parhelia, it indicated 2° below. The sky this morning was clear, and the air sharp and crisp, with quite a slight breeze.

The parhelia or mock suns were bright and distinct and in the usual places, namely, in the two intersections of a strong and large portion of a halo, with an imaginary circle parallel to the horizon passing through the sun. Each parhelion had its tail of a varied yellow, red, and white color, and in apposition to the true sun, that toward the east being 20 degrees long and that toward the west 15 degrees, both narrowing to a point at the remote ends.

The mock suns were quite red toward the sun, but pale or whitish at the side, as was the halo also. Still higher in the heavens was an arc of a curiously inverted rainbow about the middle of the distance from the top of the halo and the vertex. The arc was as marked and distinct in its colors as the common rainbow, yet somewhat wider.

The red color was on the convex and the blue on the concave of the arc, which seemed to make 180 degrees in length, its center being in or near the vertex. On the top of the halo was a kind of an inverted bright arc. This brilliant scene was visible for more than half an hour.

Although it is recorded that quite a number of parhelia have been seen, both in ancient and modern times, yet I can find an account of but one similar in its appearance to the one seen here to-day, from which I have copied largely in my description, as they seemed so nearly alike.

The other spoken of is found on page 329, of volume ii., of the *Family Magazine*, published in New York in 1835, by Redfield & Lindsay. It is there stated that they were seen at Lyndon, in the County of Rutland, England, at 11 o'clock in the morning on the 22d day of October, A. D., 1721, and were seen the following day, and again on the 26th.

J. IVOR MONTGOMERY.

Sandwich, Ill., December 30, 1880.

Restoring the Dead.

Professor Fort has presented the question of premature interments to the French Academy in a paper on artificial respiration. One fact he mentions is, that he was enabled to restore to life a child three years old by practicing artificial respiration on it some four hours, commencing three hours and a half after apparent death. A similar case is reported by Dr. Fournol, of Billancourt, who reanimated a nearly drowned person after four hours of artificial respiration. This person had been in the water ten minutes, and the doctor arrived one hour after asphyxia. Professor Fort advocates also the utility of artificial respiration in order to eliminate the poison from the lungs and glands. The length of time it is desirable to practice artificial respiration in any case of apparent death from asphyxia may be said to be several hours.

A Case of Leucoderma.

Dr. J. H. Thompson, of Goshen, N. Y., writing to the *Medical and Surgical Reporter*, states that there is a negro of quite advanced age living in that village, whose case gives an affirmative answer to the question, "Can the Ethiopian change his skin?" He furnishes a unique example of the rare skin affection known as *leucoderma*, or *achroma*. The transformation has been in gradual progress for several years, until, at the present date, the man, formerly of typical negro blackness, has become of fair Caucasian whiteness in at least half extent of surface. He is, as always happens in leucoderma, piebald as regards transformation. As an extraordinary specimen of a dermatological lesion the individual is a decided curiosity.