Correspondence.

Striking Fire from Pyrite in Coal.

To the Editor of the SCIENTIFIC AMERICAN:

To-day, while breaking a lump of coal in my coal house, there was a very vivid spark of fire and a strong smell of sulphur. Did not appear to be anything in the coal that would make clinker. I was using a steel hammer.

Now there must have been some flint in that lump of coal, and if this is not an unusual state for coal, might not the striking of fire from coal be the cause of explosions in coal mines, as it is sometimes that no reason can be given, but it is blamed to the coal miner, when he is in some cases, if not the most of them, blameless. This, it seems to me, is a new cause of danger that cannot be guarded against. The question is, How did the flint get there? It was in the coal, I am pretty sure.

Quincy, Ill. JOHN L. MOORE, J. P.

[Your hammer undoubtedly struck a piece of iron pyrites. Sometimes this mineral will act like flint in producing a spark. It is possible that explosions in mines have been caused by such cause.—ED.]

Medical Lake.

To the Editor of the SCIENTIFIC AMERICAN:

On page 361 of your issue of December 8, 1894, an article speaking of Medical Lake in the State of Washington and the Dead Sea in Palestine refers to them as being exactly alike, to wit: that no vegetation grows on the borders of either. Having but a hazy recollection of the latter, but being under the impression that I had taken a traveler's lunch on the shore of the former (some thirteen years ago), shaded by trees whose branches were overhanging Medical Lake, I set up an inquiry at once, and beg to present to your readers the following facts: That vegetation grows near the shore of either, but as soon as anything touches the water it is doomed to die. The Dead Sea, which at some places is almost 2,600 feet deep, is almost entirely surrounded by a barren and desolate country, such as will be found in our great desert countries in the far West, but at some places vegetation of all sorts thrives in close proximity of the sea, and there is a legend among the aborigines that at one time grapes were successfully raised on the borders of the Dead Sea.

Medical Lake, in Washington, is in a fine, slightly undulating country. Truly it is sparsely settled with trees, but on the very borders of said lake pine trees are thriving well, and the branches even overhang the water, but let them touch it, and those particular branches are doomed to death. Fine fruits and vegetables of all kinds suitable to the climate are growing in the immediate vicinity of Medical Lake.

Moreover, your article gives the geographical position of Medical Lake as being in the southern part of Washington, while it is almost in the very center of that State on its eastern border, and if your readers will look for Spokane County, they will find Medical Lake some thirty miles from the State line of Idaho, and if anything, a trifle nearer the northern than the southern line of the State, Stevens County, or the Colville country, as old settlers still call it, being the only county north of Spokane, while Whitman and Garfield Counties are immediately south of it.

F. HAGEMANN.

Brooklyn, January, 1895.

Raising Wrecks and Sunken Vessels.

At a recent meeting of the Institute of Marine Engineers, held in London December 10, a paper by Mr. T. W. Wailes on "Raising Wrecks and Sunken Vessels" was read.

Mr. Wailes, in his paper, dealt more particularly with two systems of salving stranded or sunken vessels, viz., lifting with lighters and pontoons, and lifting by platforming. He described in detail the practical working and advantages of each method, and pointed out the precautions necessary to be observed. Alluding to the use of casks for raising wrecks, he said that such things might do for raising small ketches, etc., in rivers and calm waters; but to attempt to raise a large vessel in an angry sea with their use was a most dangerous operation, and should not be attempted. In a case of this kind the work had to be performed between tides, and the casks could not be got in quick enough; with every rise of tide those that might be placed in were floated, the uppermost casks were pressed up inside against the deck and broken. When nearly a sufficient number were got in, the vessel might begin to get lively and knock her bottom out. And as there might be no means of scuttling the ship in an operation of this kind, she might be totally lost in a very short time. Those who undertook the raising of wrecks took upon themselves a great responsibility which required their utmost attention, with a will to face all sorts and conditions of weather and laborious work day and night. And without a constitution for this class of work, the aspirant had better rest at home.

A WONDERFUL PHOTOGRAPHIC NEBULA.

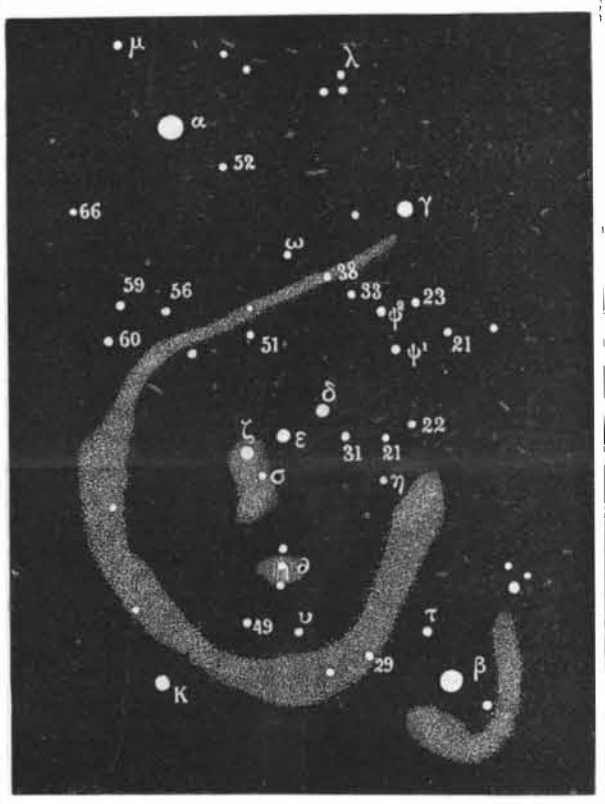
Dr. E. E. Barnard, of the Lick Observatory, gives in the December number of Astronomy and Astro-physics an interesting account of his efforts in taking pictures of the great photographic nebula of Orion. He also presents a drawing from one of the photographs of this nebula, which we have attempted here to reproduce on a black background. It shows the principal stars in the constellation of Orion; but our picture, we fear, will convey a somewhat erroneous impression, as it lacks the delicate details of Dr. Barnard's drawing. This great nebula, as we understand, is not visible to the eye, even in the largest telescopes; its existence is only made apparent upon the photographic plate by long exposure. A small short focus lens is sufficient. Dr. Barnard says the lens he used (which he calls the "lantern lens") "belongs to a cheap (oil) projecting lantern and is 1½ inches diameter and 3½ inches focus (from the rear lens). It gives a field of about 30°, only one-half of which, however, is at all flat—but on this portion the stars are fairly good. The scale is about 10·3° to the inch.

"The ratio of the aperture to the focal length is 1:2·3 while that of the Willard lens is 1:5.

"This large light ratio makes the lens very suitable for certain work where the smallness of the scale is not objectionable—or is really desired—such for instance as very large diffused nebulosities, large comets, the Milky Way, etc.

"The most interesting of the lantern lens pictures are two of the constellation of Orion (for it takes in nearly the entire constellation).

"These were made 1894, October 3 and October 24,



THE GREAT PHOTOGRAPHIC NEBULA OF ORION.

with 2 hours and 1 hour 15 minutes' exposure, respectively.

"To my surprise," says Dr. Barnard, "these pictures showed an enormous curved nebulosity encircling the belt and the great nebula, and covering a large portion of the body of the giant. A description of this nebula would not only be complicated, but it would fail, also, to give any impression of its form and magnitude; I have, therefore, made the inclosed drawing of it, which will show at once its exact location and form.

"After I had made this drawing and partly written this paper, I remembered having seen somewhere that Professor W. H. Pickering had once spoken of a great nebula shown on his photographs of Orion and previously unknown. I have looked up his paper on the subject and find it in the Sidereal Messenger for January, 1890 (vol. 9, p. 2). I will quote here what Professor Pickering has to say concerning this remarkable object:

" 'An interesting structure brought out upon our plates is a large spiral nebula whose outer extremity starts in the vicinity of γ Orionis. It passes about four degrees north of ζ, extends to γ, thence to β, then north to η, with an outside stream lying nearly north and south, and preceding β about four degrees. Another stream lying nearly east and west precedes η about the same amount. This nebula is about seventeen degrees in length by nearly the same in breadth, and surrounds a cluster of bright stars, including the belt and sword handle, and extending toward γ. The region containing the nebula is noticeably lacking in stars brighter than the eighth magnitude, but contains the very bright stars γ and β. It is possible that a plate with double our present exposures, which we are soon going to try, will fill the space between η and ζ, thus making the great nebula the inner termination of the spiral. This nebula is shown by three different exposures and is very distinctly marked.'

"Professor Pickering's photographs were made at Wilson's Peak in southern California (altitude 6,250 feet) with a Voightlander portrait lens of 2·6 inches aperture and 8·6 inches equivalent focus, with an exposure of three hours. Stars from the 11th to the 12th magnitude were well shown.

"In the present pictures the shorter exposure shows the nebula best; this was perhaps due to a darker sky.

"The nebula is brightest near 56 and 60 Orionis. Its extreme diameter is about 14° or 15°. Compared with this enormous nebula the old θ, or so-called 'great nebula,' is but a pygmy.

"That this object shown on my plates is the same photographed by Professor Pickering in 1889 there is no doubt, as will readily be seen upon comparing his description with my drawing. The present photographs, therefore, fully confirm the pictures of 1889. This confirmation is all the more valuable as it was unconsciously and independently made."

Value of Our Cereal Crops.

The report of the statistician of the Agricultural Department concerning the area, product and value of the cereal crops for 1894, which has recently been published, contains some very significant figures. The report states that the corn crop of the year is one of the lowest on record, the yield per acre being but 19·4 bushels. The area harvested in the corn-producing States has been reduced by severe drought and dry winds to 62,582,000 acres from the 76,000,000 acres planted. The crop has been about 1,212,770,000 bushels, and the estimated value is fixed at $354,719,000. The wheat crop is slightly above the average. The entire product of the country is 460,267,416 bushels, which is valued at $225,902,025. This represents the entire product of 34,882,436 acres. The rate of yield has been 13·2 bushels per acre, and the average value per bushel 49·1 cents. The estimates of the area, product and value of the other crops are as follows:

The estimates for oats are: Area, 27,023,553 acres; product, 662,086,928 bushels; value, $214,816,920; yield per acre, 24·5 bushels.

Rye—Area, 1,944,780 acres; product, 26,727,615 bushels; value, $13,394,476.

Barley — Area, 3,170,602 acres; product, 61,400,463 bushels; value, $27,134,127.

Buckwheat—Area, 789,232 acres; product, 12,668,200 bushels; value, $7,040,238.

Potatoes—Area, 2,737,973 acres; product, 170,787,338 bushels; value, $91,526,787.

Hay—Area, 48,321,272 acres; product, 54,874,408 tons; value, $468,578,321.

Tobacco—Area, 523,103 acres; product, 406,678,385 pounds; value, $27,760,739.

The Search for Wheelman Lenz.

Mr. Robert Bruce has resigned from the editorial staff of the Bicycling World and has accepted the mission from the Outing Magazine to go in search of his friend Lenz, who it is feared has perished at some point in Asiatic Turkey. The readers of the World are cognizant of the facts surrounding the mystery of Lenz's disappearance. He has been traced as far as the Turkish frontier; the last heard from him was a letter dated Tabreez, Persia, May 3, at which point he was attacked by illness. Dispatches from several points have since announced that Lenz reached Bayazid and was seen in the region of Mt. Ararat. This was the last that has ever been heard of him, Investigation has been made both by the British and American authorities, and Thos. Cook & Sons' resources have been brought into requisition, but all this has been without avail. It now remains to organize a regular expedition to settle the question forever as to the whereabouts of the missing man, and on the shoulders of Robert Bruce the responsibility of heading the expedition falls. Everything that money and experience can obtain will be placed at the disposal of the young man, and no better or fitter leader could be found than the one who has been chosen for that honor. Mr. Bruce's connection with and knowledge of Mr. Lenz are such as to fit him peculiarly for this position. His personal knowledge of Lenz is of the most intimate kind.

Fast Living.

The most remarkable instance of rapid growth is said to be recorded by the French Academy in 1729. It was a boy six years of age, 5 feet 6 inches in height. At the age of five his voice changed, at six his beard had grown, and he appeared a man of thirty. He possessed great physical strength, and could easily lift to his shoulders and carry bags of grain weighing two hundred pounds. His decline was as rapid as his growth. At eight his hair and beard were gray; at ten he tottered in his walk, his teeth fell out, and his hands became palsied; at twelve he died with every outward sign of extreme old age.—Times and Register.