

Science Notes.

Sir Robert Ball gave some most interesting information at the Royal Institution in his lectures to young people from the "Book of Nature."

To learn during these black December days that the sun is getting smaller every day gave the audience a shock.

The sun is nine inches smaller to-day than it was yesterday, and the contraction is continually going on. There was no reason, however, for alarm, although the sun twenty years hence would have shrunk a mile.

At the beginning of this century the sun was five miles bigger, and at the beginning of the Christian era 100 miles bigger, than it is to-day. The diameter of the sun is 860,000 miles, and 40,000 years hence the sun will have lost 2,000 miles. But it won't be a bad sun even then, and will look exactly the same to the naked eye 40,000 years hence as it does to-day.

Professor Langley had calculated that if all the coal in the world could be burned together in one heap, it would still fail to supply the sun's heat for the tenth part of a second.

The second of the lecturer's great chapters from the book of Nature opened with descriptions and illustrations of the mighty eruption that burst up a whole island (Krakatoa) in the Eastern Archipelago and scattered its debris in particles of cosmic dust to the most distant quarters of the earth in the autumn of 1883.

The reasons were given for such periodical outbreaks, all the phenomena of eruptions and earthquakes being accounted for on Laplace's famous doctrine of the evolution of the sun, moon, earth, and planets from the hot nebulous gases from which all solids are believed to have been condensed. The conclusion was that truly "in the beginning the earth was without form and void."

The second part of the lecture was devoted to explanations regarding the internal heat of the earth.

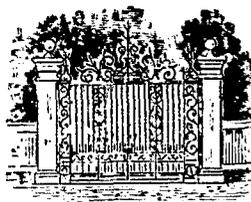
A great boring made near Leipzig, in Germany, in search of coal, by means of a diamond drill, had been carried to the depth of 150 yards over a mile, and thermometrical observations showed that there was a gradual and regular increase of temperature in the descent until a difference of 80 deg. was found to exist between the temperature at the bottom of the hole and the top.

A French scientist has recently devised a new process for the production of ozone, which he has described in a communication to the Paris Academy of Sciences. It consists (states *Health*) of the decomposition of water by fluorine passed into it rapidly. The oxygen is set free, and when analysed is found to contain a percentage of ozone which, in some experiments, was as much as 14 per cent. The ozone thus produced is said to be practically pure, and there is a possibility that the new process will be available on a commercial scale.

Sir Walter Besant prophesies wonderful things of liquid air in the future. Before many months are past, it will, he believes, be captured by the inventor, and used for the destruction of a whole army many miles distant by the hand of a drummer boy. He also predicts the abolition of the present "cumbrous engines" from railways and ocean liners and the substitution of a bucket of liquid air.

Outside the Gates.

WOMEN.



It is stated that the Queen will institute a new order of knighthood, and there is some expectation that it may be called the "Star of Africa." We hope that with some degree of justice women will be eligible for this honour. We should much like to see some of

the Army Nursing Sisters, who have served with distinction through the whole South African campaign, thus becomingly decorated.

The Princess of Wales, as President of the Soldiers' and Sailors' Families Association, makes a special appeal for funds with which to continue the Association's work, and announces that the Lord Mayor has consented to receive subscriptions. By the munificence of the public, £750,000 has already been expended. The amount required for relief being no less a sum than £50,000 a month. It is easy to realize what terrible privations the wives and children of our defenders must suffer if more money is not speedily forthcoming.

The cost of Queen Wilhelmina's wedding robe is stated to be 160*l.* a yard. The Queen is compelled by Netherlands Court etiquette to dress in white during the time of her engagement, and a second law forbids any other lady to appear in her presence also attired in white. The love story of this charming little Queen is creating much interest all over the world.

Many stories greatly to her credit are passed from land to land. One says that at the time of her coronation the Council of Ministers prepared an elaborate speech for the Queen to make, and presented it to her for her approval. The Queen, without consulting anyone, not even her mother, prepared a speech herself, and when the Prime Minister came to ask her how she liked the speech that had been prepared for her, she openly declared that she did not like it at all. "Please read mine," she added; "that is the one I shall pronounce." The day before the coronation there was a rehearsal at the Palace, and the Queen was asked to repeat the oath, but she astonished her entourage by saying, "An oath is an act of the conscience and of the heart; one cannot prepare it, nor repeat it."

Sir Theodore Martin has presented the exquisite *alto relievo* of the late Lady Martin which lately formed the subject of controversy, to the trustees of the Memorial Theatre, Stratford-on-Avon, who have gladly accepted the gift. It has been placed on the chief landing of the theatre, near the full-length portrait of Miss Ada Rehan as Katharina in "The Taming of the Shrew," given by Mr. Augustin Daly.

The following inscription appears on the memorial:—

"Helen Faucit, Lady Martin, died 31st Oct., 1898. Her genius was devoted to interpreting upon the stage and by her pen the chief female characters of Shakespeare. In her life she was an example of their finest

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