does take place, independent evidence of it should be obtainable in the case of optically active substances by a change in their rotatory power taking place when they are exposed to the X-rays, as it is well known that the ionised molecules of active compounds are possessed of very different activity from the undissociated molecules themselves. To put this point to the test, Mr. MacGregor and I have polarimetrically examined two optically active compounds, ethylic dibenzoylglycerate and methylic acetylglycerate, interposing a Crookes' focus tube between the polarising Nicol and the column of active liquid; but although the discharge was maintained in both cases for three-quarters of an hour, there was not the slightest change in the rotation observable. To facilitate the passage of the rays, we employed a thin microscope cover-glass to close the polarimeter tube at the end nearest to the Crookes' tube, and that the rays were actually traversing the column of active liquid was demonstrated by obtaining a photographic effect at the other extremity of the tube, whilst the efficiency of the Crookes' tube was further proved by the favourite test of the skeletal photograph of a hand, which yielded an impression of great sharpness and exhibiting a most remarkable amount of detail. It would appear, therefore, that the Röntgen rays either do not give rise to any ionisation at all, or that the concentration of the ions is so small as not to be detectable by means of a sensitive polarimeter. I have previously shown, in conjunction with Mr. Pickard (*Trans. Chem. Soc.*, 1896), that the active bodies in question exhibit what appears to be a process of ionisation when dissolved in certain organic solvents, which process is accompanied by a very conspicuous change in their rotatory power, so that they appeared to be specially adapted for testing this suggested influence of the X-rays.

Incidentally we have roughly tested the relative opacity of a number of organic compounds to these rays by spreading approximately equal thicknesses of each on a number of microscope cover-glasses, which were placed on a photographic plate enclosed in a black envelope, and then exposing them all simultaneously to a Crookes' tube placed a few inches above. Out of nearly forty organic compounds belonging to both the fatty and the aromatic series, the only ones exhibiting any marked opacity contained iodine, bromine, or chlorine, the iodine compounds being the most and the chlorine compounds the least opaque. Thus methyl iodide, ethyl bromide, ethylene iodide, ethylene bromide, monobromacetic acid, tribromacetic acid, bromobenzoic acid, and trimethylenebromide were very markedly opaque, and curiously monochloracetic acid was much more distinctly opaque than either dichlor- or trichlor-acetic acid.

Mason College, Birmingham. PERCY F. FRANKLAND.

Radiographs by Fluorescent Screens.

IT may perhaps interest those who occupy themselves in photographing with Röntgen rays to know that a very effective and rapid method is obtained when proceeding as I will explain. I had a piece of scheelite or native tungstate of calcium, such as occurs in a collection of minerals, crushed to a somewhat coarse powder, and made it into an emulsion with gelatine; this was applied in a consistent and uniform layer on a piece of stiff black paper, and after this was dried the surface showed numerous crystalline, glittering particles. The right condition for fluorescing was attained, as was evident, when a Crookes' tube in action was placed behind and looked at in the dark, though the luminosity was not so strong as with a screen covered with crystals of platinocyanide of barium. The paper, thus prepared, was simply laid down on a very sensitive photographic glass plate, with its fluorescent side of course in contact with the film; on the upper surface metallic objects or the fingers were put. Applying now Newton's focus tube (which, I may add, gave me excellent results in former experiments) with an induction coil, regulated to give sparks of five to six inches, I obtained sharply-defined radiographs of keys, &c., in twenty-five seconds, and of the fingers, showing the bones and metallic objects hidden between them and the plate, in ninety seconds, distinct enough to perceive even the eye in a needle that was put in the epidermis. I also tried the fluoride of calcium mentioned by Prof. Winkelmann, of Jena; but I perceived no fluorescence, perhaps because the powder was amorphous throughout. As scheelite is a very cheap mineral, large screens with fluorescent surfaces may be constructed at a trifling expense. L. BLEEKRODE.

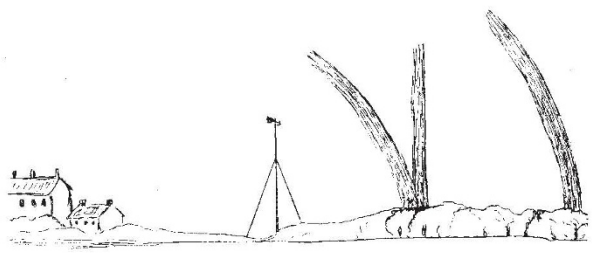
The Hague, April 6.

PERHAPS some of your readers who are practising electrography are not aware that those of them who possess a potassium platino-cyanide screen can diminish their exposures to a quarter of the time now necessary. I tried the experiment yesterday, and have been more than pleased with the results. The *modus operandi* is as follows. The screen is first laid on the dark-room table, platino-cyanide uppermost. A celluloid rapid sensitive film is then placed upon it, gelatine side downwards, and in contact with platino-cyanide. Upon the top of all is placed the hand or other object to be electrographed, and in contact with the celluloid. The whole, including screen, celluloid film, and object, are then raised from the table, and a light tight cloth bag drawn over them and properly secured. This arrangement, exposed under the Crookes' tube in the usual way, gives about four times the speed attainable without the reinforcing action of the screen. The "grain" of the screen shows; but if the salt has been finely powdered before preparing it, this is no great objection. Glass-sensitive plates are of course inadmissible.

Oaklands, Chard, April 13. J. WILLIAM GIFFORD.

Abnormal Rainbows.

ON March 22, about 6 p.m., a rainsquall was passing south-east of this station, and as the sun was shining clear and bright in the opposite quarter of the sky, a rainbow soon appeared. The colours were very brilliant, and a secondary bow was at once seen. From the base of the primary bow a perfectly straight vertical pillar arose of similar width, and the same colours, arranged in similar order from right to left; this was quite as distinct, and persisted quite as long as the usual rainbow, and the singular spectacle of the two rainbows with the vertical shaft attracted considerable attention, and was noticed by a large number of persons. It was described by several as the V-shaped rainbow. The sketch, made by my assistant, Mr. C. Grover, shows it as seen from the East Lodge, Rousdon, over the Coast Guard Station. C. E. PEEK.



Coast Guard Station.

Rousdon Observatory, Lyme Regis, Dorset.

Family Data.

A YEAR ago circulars were printed and cards issued with a view to the formation of a collection of simple measurements on parents and children, which would be of service in testing theories of heredity. In particular, such problems as are dealt with by me in a memoir on regression, heredity, and panmixia (printed in the *Phil. Trans.* of the current year), which treats of biparental inheritance, require statistics far more numerous than have been hitherto available. The measurements are of a simple character, involving but little elaboration, and all that is required is a willing father, mother, and one or more sons or daughters.

Three thousand cards and circulars were distributed, but experience has shown that general distribution is of little practical value. The cards are readily taken, but rarely returned. The only satisfactory method is to find a willing helper who is sufficiently conscious of the importance of the problems of heredity to distribute and collect himself ten or twelve data cards.

Up to the present I have obtained measurements on about 700 families. I am most anxious to reach at least 1000. May I make an appeal through NATURE for such helpers? I am prepared to send full directions and any number of cards to any of your readers who are willing to help. All I would ask is that