last sequence of figures is sufficiently curious, and is one that can easily be remembered.—C. V. B.

### A Green Sun.

I RECOLLECT reading some years ago in NATURE an observation of Mr. Norman Lockyer, to the effect that he had seen the sun green through the steam escaping from the funnel of a boat on Lake Windermere. In May 1888, I spent a considerable time one day viewing the sun through steam escaping at various pressures from the boilers of a colliery in Monmouthshire. In no case could I, or the friends with me, succeed in seeing the sun of a green colour through the steam, although we viewed it in a very great variety of ways. All we saw was the usual orange or red coloration.

But, this month, I have been watching the sun through steam puffed out from locomotives, and have, on five or six occasions, seen a bluish-green coloration extending over the whole disk. But sometimes the sun appeared simply white, and sometimes it was coloured orange-red. I cannot exactly determine the circumstances which produce the bluish-green; but I have seen it best with freshly puffed steam which had not risen very far above the funnel.

If the vapour particles are assumed of fairly uniform size, the following may be a possible explanation. The rays, coming through particles of vapour (really water particles in suspension) may be retarded as compared with the rays passing between the particles; and, if this retardation is such as to delay the red light passing through the particles one half wave-length, as compared with the red light not so passing, the result would be the destruction of the red element in the white light, and the light left would then appear bluish-green. This suggestion I owe to the courtesy of Sir G. G. Stokes, who also communicated to me the following very interesting observation. When a jet of transparent steam is escaping from a tube, we know, from Mr. Shelford Bidwell's experiments, that the steam becomes visible vapour, if an electrified point is brought near the jet. Sir G. Stokes noticed that the permanent shadow of the vapour on a screen was orange; but that, for a fraction of a second after the commencement of the electrification, a faint greenish shadow, preceding the orange one, was frequently seen. Water globules, about one ten-thousandth of a centimetre in diameter, might produce the requisite retardation.

I shall be glad to hear of other observations of this bluish-green coloration. After the great eruption of Krakatão we know that the sun was seen coloured green and blue.

CHAS. T. WHITMELL.

18 Park Place, Cardiff, February 26.

### Frozen Fish.

THAT fish suffer, when imprisoned under a covering of ice in comparatively shallow ponds or lakes, goes without saying. But do they necessarily die when inclosed for lengthened periods in solid ice? My own opinion is that the latter condition is far less injurious to them than the former. It is a question of importance, for it concerns the conditions under which fish probably exist in comparatively shallow waters in high latitudes.

In one of the "Arctic Voyages" (I am not able, at this moment, to give the reference, and rely upon memory) it is distinctly stated that fish (carp, I think), frozen so hard as to necessitate the use of an axe in order to divide them, revived when thawed before the cabin fire, and "jumped about," as is usual with fish out of water.

There are fish and fish. Has the severe winter of 1890–91 caused any important mortality; if so, to which in particular?

R. MCLACHLAN.

Lewisham, March 6.

### Zittel's "Palæontology"—Reptiles.

IT has been pointed out to me that in my review of Prof. v. Zittel's "Palæontologie" (March 5, p. 420) I have omitted to mention that, although other writers have placed the Dolichosauria next to the Pythonomorpha, it is only in a paper recently read by Mr. G. A. Boulenger before the Zoological Society, but not yet published, that the one group was considered to be the ancestor of the other. R. L.

March 9.

## THE CHEMICAL SOCIETY'S JUBILEE.

AT the meeting in celebration of the Jubilee of the Chemical Society, held in the theatre of the London University on Tuesday, February 24, 1891, the proceedings were opened by the following address from the President, Dr. W. J. Russell:—

We meet to-day to celebrate the fifty years' existence of our Society, a time, if measured by the progress which our science has made, equal to centuries of former ages, but which in years is so brief a space that we have, I am happy to say, with us to-day some of those who were present and who took an active part in the foundation of the Society, and I need hardly say with how much interest we shall listen to their reminiscences of the time and circumstances connected with the birth of our Society.

I would, by way of introduction, say a few words, first, with regard to our Society, and afterwards with regard to the state of chemistry in England when our Society was founded. We boast, and I believe rightly, that our Society holds the distinguished position of being the first which was formed solely for the study of chemistry. Chemistry and physics, twin sisters, had hitherto always dwelt together, and many were the societies, both in this country and abroad, devoted to their joint study and development.

In London there was the Royal Society, which had hitherto received the most important chemical papers; there was also the Society of Arts, which is 110 years, and the British Association, which is ten years, senior of our Society. In Manchester the Literary and Philosophical Society had been founded and actively at work since 1781; and we admit that our neighbours at Burlington House, the Astronomical, Antiquarian, Linnean, and Geological Societies, are all our seniors: they had a distinct individuality and literature of their own, which called them into existence some forty to eighty years before the commencement of our Society. Small private chemical societies, no doubt, existed: they are the natural forerunners of a large society, and become merged into it. The Chemical Section of the British Association, which is an ephemeral and peripatetic Chemical Society, had existed from the founding of that body. If we turn to other countries, we find that, much as our science had been cultivated on the Continent, it did not until later times engross a whole society to itself, the French Chemical Society not having been formed until 1857, and the now great Berlin Chemical Society not until 1868. Our interest, however, at the moment is rather in the growth of chemistry in this country than in what occurred elsewhere.

To-day we may learn how it came about that the first Chemical Society was established in England. I may, however, state that the reason for our meeting depends on the official record that on February 23, 1841, twenty-five gentlemen "interested in the prosecution of chemistry" met together at the Society of Arts to consider whether it be expedient to form a Chemical Society. Of the twenty-five who then met I am happy to say three are present—Sir W. Grove, Sir L. Playfair, and Mr. Heisch; and Mr. J. Cock is another of this band who is still alive but is not present.

These twenty-five gentlemen appear without dissent to have come to the conclusion that it *was* expedient to form a Chemical Society, and appointed a committee of fourteen to carry this resolution into effect. So expeditious were they in their work, that in little more than a month the first general meeting was held, and the provisional committee brought forward a report embodying a plan for the constitution and government of the Society, and this plan remains essentially the same, save in one point, to the present day. I refer to the formation of a museum of chemical specimens; this project was abandoned some years ago. It is worth recording that at this first