

coloured under-wings. Of these fifteen all have some more or less transparent spaces or colourings. In some cases portions of the under-wings are brightly coloured, though not transparent, but both in this case and when there are transparent places they appear chiefly on parts that are apparently invisible when the wings are closed. If these observations are correct, the insects are carefully protected when at rest or when they are laying their eggs. Whether they pair on the ground or with shut wings I do not actually know, for after carefully watching every butterfly I have come across for two summers, I have not succeeded in seeing any of the protectively coloured sorts pairing. It seems likely enough therefore that their protective colours come into play then. My opportunities for observation are however extremely limited, and it is to draw the attention of those more favourably situated to the subject of the colours of our common butterflies that I write this. In the fifteen protectively-coloured butterflies mentioned above I did not include the "fritillaries," because of the strange metallic lustre on their under-wings. Still they seem suddenly to disappear when they settle, and the metallic spots may take the place of the transparent or coloured ones in other sorts by throwing off the light, and thus enable the insects to recognise each other. Eight kinds more or less transparent but not seemingly protectively coloured, and two common "blues," make up the thirty kinds I have been able to handle. The under-wings of the "Blues" are certainly protectively coloured, but there seems to be no transparency or bright markings in them.

J. INNES ROGERS

Putney, February 24

Dust, Fogs, and Smoke

THE present endeavours to alleviate the smoke nuisance in London give some interest to the description of the effects of coal smoke on London life in former ages.

I do not mean to speak of the well-known petition presented to Edward the First by the nobility and gentry against the use of sea-coal in London and the consequent proclamation of that monarch interdicting its use. But I allude to the following lines written and published by Evelyn in 1661 in his "Fumifugium," but which I borrow from the "History of London," by Noorthouck, London, 1773.

"The immoderate use of, and indulgence to sea-coal alone in the city of London, exposes it to one of the fowlest inconveniences and reproaches, that can possibly befall so noble, and otherwise incomparable city: and that, not from the culinary fires, which for being weak and lesse often fed below, is with such ease dispelled and scattered above, as it is hardly at all discernible, but from some few particular tunnels and issues, belonging only to brewers, diers, lime-burners, salt, and soap-boilers, and some other private trades one of whose spiracles alone, does manifestly infect the aer, more than all the chimneys of London put together besides. And that this is not the least hyperbolie, let the best of judges decide it, which I take to be our senses: whilst these are belching it forth their sooty jaws, the city of London resembles the face rather of Mount Aetna, the court of Vulcan, Stromboli, or the suburbs of hell, than an assembly of rational creatures, and the imperial seat of our incomparable monarch. For when in all other places the aer is most serene and pure, it is here eclipsed with such a cloud of sulphure, as the sun itself, which gives day to all the world besides, is hardly able to penetrate and impart it here; and the weary traveller, at many miles distance, sooner smells, than sees the city to which he repairs. This is that pernicious smoake which sullies all her glory, superinducing a sooty crust, or furr upon all that it lights, spoiling the moveables, tarnishing the plate, gildings, and furniture, and corroding the very iron bars and hardest stones with those piercing and acrimonious spirits which accompany its sulphure; and executing more in one year than exposed to the pure aer of the country it could effect in some hundreds. It is this horrid smoake which obscures our churches and makes our palaces look old, which fouls our clothes, and corrupts the waters, so as the very rain and refreshing dews which fall in the several seasons precipitate this impure vapour, which with its black and tenacious quality, spots and contaminates whatever is exposed to it. It is this which scatters and strews about those black and smutty atoms upon all things where it comes, insinuating itself into our very secret cabinets, and most precious repositories: finally, it is this which diffuses and spreads a yellownesse upon our choyest pictures and hangings; which does this mischief at home, is Averns to

fowl, and kills our bees and flowers abroad, suffering nothing in our gardens to bud, display themselves or ripen; so as our anemones and many other choyest flowers will by no industry be made to blow [*sic*] in London, or the precincts of it, unless they be raised on a hot-bed and governed with extraordinary artifice to accelerare their springing; imparting a bitter and ungrateful taste to those few wretched fruits, which never arriving to their desired maturity seem, like the apples of Sodome, to fall even to dust when they are but touched. Not therefore to be forgotten is that which was by many observed, that in the year 1644 when Newcastle was besieged and blocked up in our late wars, so as through the great dearth and scarcity of coales, those famous works many of them were either left off, or spent but few coales in comparison to what they now use; divers gardens and orchards, planted even in the very heart of London (as in particular my lord Marquesse of Hertford's in the Strand, my lord Bridgewater's and some others about Barbican), were observed to bear such plentiful and infinite quantities of fruits, as they never produced the like either before or since to their great astonishment: but it was by the owners rightly imputed to the penury of coales and the little smoake, which they took notice to infest them that year; for there is a virtue in the aer to penetrate, alter, nourish, yea and to multiply plants and fruits, without which no vegetable could possibly thrive."

The improvement mentioned by Evelyn, when the use of coal was for a time less extensive in London, is particularly worthy of notice, and ought, I think, to be considered as an encouragement to persist in the attempt of rendering London as smokeless as possible.

Jersey, February 25

CHATEL

THE GERMAN CHEMICAL SOCIETY

ON November 11, 1867, a meeting of about eighty chemists was held in Berlin to take steps for inaugurating a new Chemical Society. On January 13 of the succeeding year (1868) the first meeting of the Society was held, when Prof. A. W. Hofmann was elected president, and the roll call of the Society contained 105 names. During the first year of its existence 97 papers were read before the Society; at the close of the year the membership had increased to 275, and the Society found that a volume of 282 pages was needed to contain the papers communicated to it.

Since 1868 the German Chemical Society has steadily increased in size and in usefulness; the *Berichte* for 1880 consists of two large volumes numbering, between them, 2473 pages, and containing the 563 papers communicated to the Society during the year, besides numerous abstracts of papers published elsewhere. The income of the Society for 1880 amounted in round numbers to the sum of 2000*l.*, and of this about 1400*l.* was set against the cost of publishing the *Berichte*.

During the thirteen years of its existence the German Chemical Society has published in its *Berichte* most of the important discoveries in pure chemistry made in that period. It has been the aim of the Society to publish papers communicated to it with as little delay as possible. Meetings are held twice monthly during the session, and the papers read at one meeting are published in the *Berichte*, which appears on the day on which the next meeting takes place. Papers appearing within so short a time after they are communicated are necessarily brief and concise; but this rapid publication confers a great benefit on all chemists, as they are thus put in possession of at least the leading facts concerning all recent work almost as soon as these facts have been established by the workers. If papers in the *Berichte* are sometimes wanting in completeness and symmetry, many of them are full of life and stir, telling as they do of work actually proceeding in the laboratory; appearing sometimes in short abrupt snatches, they convey something of the enthusiasm of the worker as he compels nature, bit by bit, to yield her treasured secrets.

The system of printing abstracts of papers published in the various chemical journals has recently been adopted