to the entomologist, but also to the practical cultivator, wether of field or garden crops. The persistent energy with which Miss Ormerod and other observers has advanced this discussion, the result of which is the full and elaborate report before us, is worthy of all praise. It is satisfactory to learn that for the coming year a large number of fresh observers have promised their help, and with the hope that this notice may induce some of our readers to communicate their own experiences to Miss Ormerod at Dunster Lodge, Spring Crove, Isleworth, we may perhaps mention the following as a guide to the kind of information required:

1. Any notes as to the extent of insect injury, and estimated pecuniary loss from such.
2. Remedies found of practical use in checking such ravages.
3. Any notes of coincident circumstances such as of weather influences, or surroundings, or state of the soil which may increase or diminish insect attack.

It is pointed out that even the shortest notes are valuable when collated with others, and the importance of noting down the observations as they occur is also impressed upon observers.

JOHN R. JACKSON

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of rejected manuscripts. No notice is taken of anonymous communications.]

The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that if instructions are neglected the appearance even of communications containing interesting and novel facts could not be ensured.

The Density of Chlorine

In NATURE, vol. xxi. p. 529, my friend, Mr. P. D. Brown, argues that the low density of chlorine at high temperatures may be explained on the assumption that it undergoes decomposition in the sense of the equation Cl₂ = 2Cl, thereby renewing a suggestion made by Lieben in a communication to the French Academy shortly after the publication of V. and C. Meyer's first paper.

A few days ago it might have been said that, however probable such an explanation might appear to be on general grounds, there was nothing in Meyer's observations to justify it rather than the alternative hypothesis that the chlorine underwent decomposition into other as yet unknown substances. On the contrary, taking into account Meyer's observations on iodine, which by reason of their greater number may be regarded as furnishing more conclusive testimony than the more limited series with chlorine, there was apparently distinct evidence in favour of the latter view. The disassociation of iodine, according to Meyer, takes place within a range of about 400°C, between 600°C and 1500°C, and a further increase of nearly 600°C is practically without effect; whereas had the change been of the character indicated by Mr. Brown, a further diminution in density ought to have been observed.

A recent communication to the French Academy by Cape and Basset, however, materially advances the discussion. These observers maintain that Meyer's estimates of temperature (made by the calorimetric method with a platinum braid) are excessive, and that, in fact, the highest temperature realizable with the Perret gas-furnace (determined by an air thermometric method), is 1,390°C instead of about 1,570°C. They have also obtained a considerably lower value for the density of iodine at the highest temperature of the furnace, the quotient of the theoretical density (ρ = 8.986) by the observed density being 60 for their highest observation, and 65 for Meyer's. Their results are as follows:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Density</th>
</tr>
</thead>
<tbody>
<tr>
<td>445</td>
<td>8.70</td>
</tr>
<tr>
<td>830–935</td>
<td>8.78</td>
</tr>
<tr>
<td>1,000–1,250</td>
<td>8.64</td>
</tr>
<tr>
<td>1,250</td>
<td>7.48</td>
</tr>
<tr>
<td>1,390</td>
<td>6.07</td>
</tr>
<tr>
<td>1,600</td>
<td>5.32</td>
</tr>
</tbody>
</table>

Should it ultimately be proved that the molecules of the halogens are thus dissociable, our present views regarding phenomena such as the nascent state and the influence of light in inducing hydrogen and chlorine to enter into reaction will meet with much support; the appeal as to their elementary nature will then be entirely thrown upon the spectroscope for decision.

London Institution, April 10

HENRY G. ARMSTRONG

The Omori Shell Mounds

I have received the enclosed letter from Prof. More, with a request that I should forward it to you. I hope that it may be published, for the article in NATURE to which it refers seems to do very scant justice to Prof. More's work, especially to the evidence adduced by him on exhumation by the ancient inhabitants of Japan—on their platyceneic tibiae—on their degree of skill in ceramic art—and beyond all other points, on the changes in the molluscan fauna of the islands since the period in question.

It is a remarkable fact, which incidentally appears in Prof. More's memoir, that several Japanese gentlemen have already formed large collections of the shells of the Archipalego, and have zealously aided him in the investigation of the prehistoric mounds. This is a most encouraging omen of the future progress of science in Japan.

CHARLES DARWIN

Down, Beckenham, Kent, April 9

In NATURE, vol. xxi. p. 530, is a review of my memoir on "The Omori Shell Mounds" by Frink, V. Dickinson. I do not now heed the spirit in which it is written, nor would I deem it worthy of notice did it not occur in the pages of your widely-read magazine. One expects in a reviewer some knowledge of the subject he reviews. Mr. Dickinson, by a series of mistakes, betrays his ignorance of the whole matter. The extraordinary blunder he makes regarding the Ainos has already been promptly corrected by a Japanese gentleman residing in London. It is chargeable to a notion that Mr. Dickinson has not lived in Japan, and would not, in common with so many of his countrymen, commit the wilful blunder of calling the principal city of the empire by its wrong name. On the other hand, it is impossible he could have seen the Omori deposits, otherwise he would not have made another blunder by expressing his belief that they have been completely swept away, when in truth a small portion of them have been removed. He says: "These mounds consist for the most part of shells, little, if at all, distinguishable from what are still found in abundance along the shores of the Gulf of Yakto," Had he taken the trouble to read the memoir he attempted to review he would have seen that all the species occurring in the mounds vary in size, proportion of parts, and relative abundance of individuals from similar species living along the shores to-day. That some species extremely abundant in the mounds are scarcely met with in the vicinity, while one species has never been found within 400 miles of Omori; indeed, it belongs to different zoological provinces.

His complaint at the large number of plates given to the illustration of pottery, tablets, &c., shows how incapable he is of appreciating that part of the work which has received the highest commendation from archaeologists, namely, the presentation as far as possible an exhaustive illustration of every form of vessel and variety of ornamentation. He lamented the absence of a plate giving figures of the bones and shells, especially of the latter, which are stated to belong to extinct species. Had he looked at the last plate (a copper plate, by the way, and not a lithographic one, as he calls it) he would have seen every species, with one exception, figured, when similar forms from the neighboring shores could not be got for comparison.

Did not feel justified in comparing shell-mound forms with similar forms from Nigeta, Koho, or Nagasaki, and the reason will be obvious to any one having the slightest familiarity with the variations that species show in widely separated localities.
As to figuring fragments of bones, I did all that my limited knowledge of the art of mammal osteology would permit. In identifying the common mammals, and in describing a list of bones of the more numerous and better writers have done in similar investigations. Possibly Mr. Dickens may here find a fruitful field for investigation, in which he may some day establish the recent nature of the deposits. I cheerfully profess to him that what has been long familiar to themselves must be well known in England, forgetting that books on such subjects are written at long intervals, and when written rarely contain all the information up to date. I am exceedingly thankful for any additional facts or corrections for a new edition of the book, but I do not acknowledge to "errors" in the omission of facts which were not to be found in any books in English libraries at the time I wrote. I will make a few observations on the chief points in Mr. Everett’s letter.

1. As to the accuracy of the maps I am not responsible, as Mr. Everett might well have suspected in a series of works issued in Mr. Stanford’s name. The fact that Palewan and Minclando are now as completely Spanish possessions as Lazau, I, think, quite new to British readers.

2. I certainly omitted the mention of Tupals among the Philippine mammals by an oversight. In giving a general sketch of the possibilities of Philippine zoology I should, however, again omit Palewan from consideration, as that island is zoologically more nearly connected with Borneo. In the absence of all other information in about Palewan, I took my account chiefly from Courbou’s ‘Sur l’île de l’Indonésie.” He mentions the hair of the natives, and deer among the wild animals; and as deer abound both in Borneo and the Philippines, their absence in Palewan requires proof rather than their presence.

3. I trust that the rhinoceros and wild cattle in Borneo has not yet, that I am aware, been given by any writer. My general statements, though imperfect, do not seem very far from the truth.

4. As to what Mr. Everett styles his “extraordinary statement” about the “Ilanan” and “Mimlanos” tribe, I founded it on Mr. Spencer St. John’s book. He says (vol. i. p. 396 of the Indian—"They were a dark, sharp-featured race, intelligent-looking, and appeared in features very much like the Lamb Dyaks of Sarawak.” While of the Mimlanos he says (p. 462)—"Some are clothed like Mahometans, others like Dyaks, so that race they undeniably belong.” As the Mimlanos live at the mouths of rivers, while the Ilanda live inland, I cannot see the "extraordinary" character of the statement that they “correspond” to the division of Land and Sea Dyaks usually made in the Sarawak territory. This does not imply that there are no differences of language, customs &c., but that there are such differences; but if there are radical physi at differences they were evidently not known to Mr. St. John, whose long residence in Borneo and great opportunities for acquiring information entitle him to be considered an authority.

It will be seen that Mr. Everett’s new matter is very scanty, and I should not have thought it worth while to do anything more than make use of it, were not his letter written in a somewhat critical spirit, which I think he would not have adopted had he known the great difficulty of obtaining accurate information on the innumerable subjects that have to be treated in a work on "Australasia,” and dealing with countries which have been as yet imperfectly described. Like some other critics, too, he forgets that general statements for popular information, which must be comprised within a few lines, cannot always be made really accurate without becoming vague, and thus ceasing to convey any definite idea.

ALFRED R. WALLACE

The Comet 1851 I.

In the course of some work on comets lately communicated to the Royal Society of Edinburgh, in which I show reasons for believing that a planet more distant from the sun than Neptune is at present in the position R.A. 11°. 380°, N.P.D. 5°, or thereabouts, I was led to the conclusion that the comet 1851 I., visible to the naked eye, should have been in perihelion three times before the last appearance. The period of the comet has been calculated to be 454.5 years. It might therefore to have been visible in the years 1445, 1031, 617. Comets were observed in 1444, 1032, 617. It will be interesting to many readers of Nature to know that these had, indeed, they were all observed in July or August, and were all seen to pass close to β Leonis. The following accounts of them have been given:—

A.D. 617 (2).—"In July a comet with a tail 3° or 4" long was seen near β Leonis.”—Machlis.

A.D. 1032.—"On July 15 an extraordinary star appeared in the north east. It approached β Leonis."—(‘Compendium Historiarum,” 736.)

A.D. 1444.—"On August 6 a comet 10° long was seen to the east of β Leonis; it became longer day by day till August 15, when it entered the sidereal division of a Virgin.”—(Biot.)

The longitude of β Leonis is 169°, its latitude 17° N. If the earth were to remain fixed in its position for July 15 it would see the comet 1851 I pass through the point where longitude is 169° 30', latitude 17° N. If the earth were in the position of August 6 it would pass through a point whose longitude is 17° and latitude 17°, or to the east of β Leonis, and moving towards a Virginis. Thus these four appearances are the same comet; and the meteor-shower of April 20, hitherto considered to depend on the comet 1851 I., cannot be considered to agree in period.

GERARD ORORE

Anderson’s College, Glasgow, April 2

A Feast of Memory

The following fact of memory seems to be worthy of record in your pages. It is new to the writer, though by no means uncommon here over.

Like the country itself, many institutions in the United States run to size in a way apt to astonish the dwellers in our "little island." So it is with the Hotel, where hundreds of persons are simultaneously dining in one room. At the entrance, the hats, &c., of the guests are deposited with a person in attendance to receive them. He does not check or arrange them in any particular order, and he invariably restores them, each to the right owner, as they emerge from the dining-room. The difficulty of the feat naturally depends on the number of hats in charge at any time. The most remarkable case which has come under the notice of the writer is at the Fifth Avenue Hotel, New York. There the attendant, who is on duty several hours a day, has sometimes as many as five hundred hats in his possession at one time. A majority of them belong to people whom he has never seen before, and there is a constant flux of persons in and out. Yet even a momentary hesitation in selecting the right hat rarely occurs. The performer at the above hotel says that he forms a mental picture of the broadrim of the hats, and, on looking at any hat at the wearer’s face is instantly brought before his mind’s eye. It would be interesting to test how far this power is possessed by an average unpractised person who has put in the right way of his life. While many of the features are not visible, at least not consciously so, it appears probable that most cases of extraordinary memory consist in an unusual power of making and retaining visualised impressions. Mr. Galton’s interesting paper in Nature (vol. xx. p. 206) is an authority. Numerals goes a long way to show this to be so in mental arithmetic. Systems of artificial memory tend towards the same point; for they may be roughly described as mainly resting on the systematic