stone circle the priests, by looking along the axis in an opposite direction, could note the sunsets marking the completion of the half of the sun's yearly round in November and February.

Now to those who know anything of the important contributions of Grimm, Rhŷs, Fraser, and many others we might name, to our knowledge of the mythology, worships and customs in the Mediterranean basin and western Europe, an inspection of the first columns in the above tables will show that here we have a common meeting ground for temple orientation, vegetation and customs depending on it, religious festivals and mythology. From the Egyptian times at least to our own a generic sun god has been specifically commemorated in each of the named months. Generic customs with specific differences are as easily traced in the same months; while generic vegetation with specific representatives proper to the season of the year has been so carefully regarded that even December, though without May flowers or August harvests, not to be outdone, brings forward its offering in the shape of the berries of the mistletoe and holly.

With regard especially to the particular time chosen for sun-worship and the worship of the gods and solar heroes connected with the years to which I have referred, I may add that a cursory examination of Prof. Rhŷs' book containing the Hibbert lectures of 1886, in the light of these years, used as clues, suggests that in Ireland the sequence was May–November (Fomori and Fir Bolg), August–February (Lug and the Tuatha Dé Danann), and, lastly, June–December (Cúchulainn). Should this be confirmed we see that the farmers' years were the first to be established, and it is interesting to note that the agricultural rent year in many parts of Ireland still runs from May to November. It is well also to bear in mind, if it be established that the solstitial year did really arrive last, that the facts recorded by Mr. Fraser in his "Golden Bough" indicate that the custom of lighting fires on hills has been in historic times most prevalent at the summer solstice; evidently maps showing the geographical distribution of the May, June and August fires would be of great value.

Some customs of the May and August years are common to the solstitial and equinoctial years. Each was ushered in by fires on hills and the like; flowers in May and the fruits of the earth in August are associated with them; there are also special customs in the case of November. In western Europe, however, it does not seem that such traditions exist over such a large area as that over which the remnants of the solstitial practices have been traced.

I have pointed out that both the May and August years began when the sun had the same declination (16° N.) or thereabouts; once, on its ascent from March to the summer solstice in June, again in its decline from the solstice to September. Hence it may be more difficult in this case to disentangle and follow the mythology, but the two years stand out here and there.

With regard to August, Mr. Penrose's orientation data for the panathenæa fix the 19th day (Gregorian) for the festival in the Hecatompedon; similar celebrations were not peculiar to western Europe and Greece, as a comparison of dates of worship will show.

Hecatompedon	April 28 and	August 16
Older Erectheum	April 29 ,,	August 13
Temple of Min, Thebes ...	May 1 ,,	August 12
,, Ptah, Memphis ...	April 18 ,,	August 24
,, ,, Annu ...	... ,, ,,	,,
,, Diana, Ephesus...	April 29 ,,	August 13

In the above table I have given both the dates on which the sunlight (at rising or setting) entered the temple, but we do not know for certain, except in the case of the Hecatompedon, on which of the two days the temples were used; it is likely they were all used on both days, and that the variation from the dates proper to the sun's declination of 16° indicates that they were very accurately oriented to fit the local vegetation conditions in the most important and extensive temple fields in the world.

This is the more probable because the Jews also after they had left Egypt established their feast of Pentecost fifty days after Easter = May 10,[1] on which day loaves made of newly harvested corn formed the chief offering.

With regard to the equinoctial year, the most complete account of the temple arrangements is to be found in Josephus touching that at Jerusalem. The temple had to be so erected that at the spring equinox the sunrise light should fall on, and be reflected to the worshippers by, the sardonyx stones on the high priest's garment. At this festival the first barley was laid upon the altar.

But this worship was in full swing in Egypt for thousands of years before we hear of it in connection with the Jews. It has left its temples at Ephesus, Athens and other places, and with the opening of this year as well as the solstitial one the custom of lighting fires is associated, not only on hills, but also in churches.

Here the sequence of cult cannot be mistaken. We begin with Isis and the young sun-god, Horus, at the pyramids and we end with "Lady day," a British legal date; while St. Peter's at Rome is as truly oriented to the equinox as the pyramids themselves, so that we have a distinct change of cult with no change of orientation.

If such considerations as these help us to connect Egyptian with Celtic worships we may hope that they will be no less useful when we go further afield. I gather from a study of Mr. Maudslay's admirable plans of Palenque and Chichén-Itzá that the solstitial and farmers' years' worships were provided for there. How did these worships and associated temples with naos and sphinxes get from Egypt to Yucatan? The more we know of ancient travel the more we are convinced that it was coastwise, that is, from one point of visible land to the next. Are the cults as old as differences in the coastlines which would most easily explain their wide distribution?

NORMAN LOCKYER.

(*To be continued.*)

HABITS OF INSECTS.[2]

SEVEN volumes of M. Fabre's observations on insects have been published between 1879 and 1890, under the title of "Souvenirs Entomologiques," containing the results of long and patient investigations into the habits of insects of the south of France; and we are glad to see the first volume translated into English in its entirety. It is much better to begin at the beginning, rather than to issue merely a selection from the seven volumes, which was what we had expected to find when we opened the book. The English edition is tastefully got up, and the illustrations are attractive. We may say that there are none in the French except a few text-illustrations in some of the later volumes of the series. The English title, "Insect Life," is, however, somewhat objectionable, as there are already other English and American books bearing the same title.

The first volume, now to be noticed, includes twenty-two chapters, relating to the habits of the Sacred Beetle,

[1] Compare this with the fifty maidens who ran away from the Ultonian court (Rhŷs, "Hibbert Lectures," p. 434).

[2] "Insect Life: Souvenirs of a Naturalist." By J. H. Fabre, Docteur ès Sciences. Translated from the French by the author of "Mademoiselle Mori." With a preface by David Sharp, M.A., F.R.S., and edited by F. Merrifield. With illustrations by M. Prendergast Parker. Pp. xii+320 (London: Macmillan and Co., Ltd., 1901.) Price 6s.

various fossorial Hymenoptera of the genera Cerceris, Sphex, Ammophila and Bembex, and the Mason Bees of the genus Chalicodoma; and the volume is varied by autobiographical reminiscences and an account of an ascent of Mont Ventoux. It is interesting to learn that M. Fabre's enthusiasm for entomological investigation was excited by his accidentally meeting with a pamphlet of Léon Dufour's on the habits of Cerceris as long ago as 1843. These observations, as the present volume shows, M. Fabre continued and completed with great success.

As regards the Sacred Beetle, M. Fabre considers that he has quite disproved the old idea that the balls of dung rolled by the beetle ever contain eggs; they are simply stores of food, and the real nest prepared for the egg is constructed underground later in the year.

M. Fabre's observations on the limitations of instinct in Hymenoptera are most curious and interesting, but are too long to be discussed here in detail; for these the book itself must be consulted. Suffice it to say, however, that they throw no light on the nature of instinct itself, which remains more mysterious than ever; but only illustrate its manner of working.

The translation is very readable, sufficiently so to arrest the attention of a mere child who feels an interest in insects, notwithstanding that it sometimes deals with problems that no man living can yet answer. As an instance of the style of the book we will quote a portion of M. Fabre's account of the Praying Mantis:—

"A word more of the 'Praying Mantis,' the *Prégo Diéou*, as it is called in Provence, *i.e.* the Pray-to-God. And indeed its long pale green wings, like ample veils, its head upraised to heaven, its arms folded and crossed on its breast, give it a false resemblance to a nun in ecstatic devotion. All the same, it is a ferocious creature, bent on carnage. Although not especially favourite hunting-grounds, the workshops of various burrowing Hymenoptera are often visited by it. Posted on some bush near the burrows, it waits until chance brings some Sphex returning home within reach, thus achieving a double capture, catching together Sphex and prey. Its patience is long tried; the Sphex is suspicious and on her guard, but from time to time a rash one lets herself be caught. By a sudden rustle of half-spread wings, as by a convulsive movement, the Mantis terrifies the approaching Sphex, which hesitates for a moment, and then with the suddenness of a spring the toothed forearm folds back on an arm also toothed, and the insect is seized between the blades of the double saw, as though the jaws of a wolf-trap were closing on the beast as it takes the bait. Then, without unclosing the cruel machine, the Mantis gnaws little mouthfuls of its victim. Such are the ecstasies, the prayers, and the mystic meditations of the *Prégo Diéou*."

We hope the work will be completed by the translation of the remaining volumes of the series. At the same time, we regret to note that a few glaring technical errors in the translation have escaped notice. "Pattes" is usually translated "feet," but in almost every case "legs" would be the proper rendering. But what are we to think of such a passage as this, on p. 36, where the word "doigt" of the original, used for the five-jointed tarsus, is translated "claw"? "One claw to each foot is the rule, and this claw, at least in the case of the superior Coleoptera, especially the scavenger beetles, contains five joints." Again, in chapter ix., it is clear that the translator does not understand the real meaning of the terms "grillon," "criquet" and "acridien," and has sadly mixed them up, reversing "grasshoppers" and "crickets" in more than one passage. But when we object to "*Bupresticis micans* and *Buprestis flavomaculata*" beneath the plate opposite p. 46, we have exhausted our fault-finding, and warmly recommend the book to the attention of all who are interested in the habits of insects and the many curious problems which they offer for our investigation.

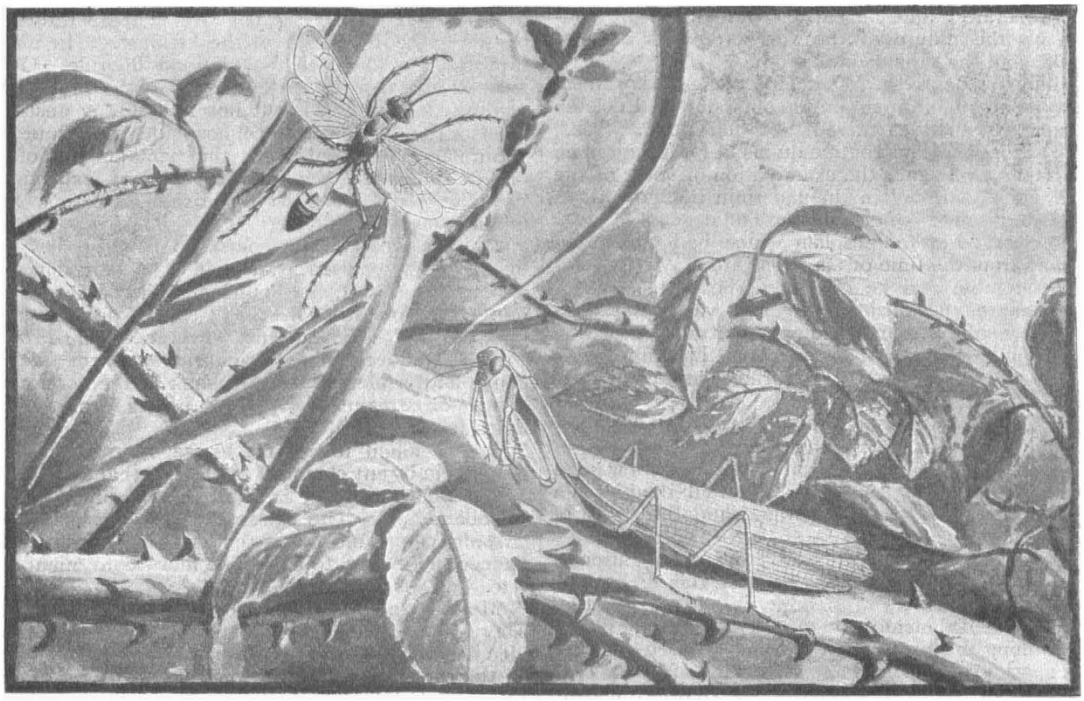

FIG. 1.—The Sphex of Languedoc and its enemy, the Praying Mantis.