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THE BEEKEEPER:

AN INDEPENDENT MONTHLY JOURNAL OF PRACTICAL AND SCIENTIFIC APICULTURE.

VOL. I., No. 1.

OCTOBER 15, 1879.

PRICE 7s. PER ANNUM.

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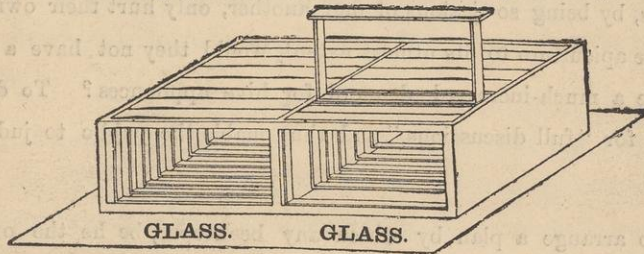
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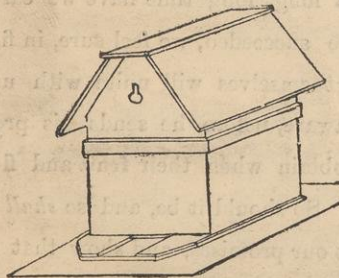
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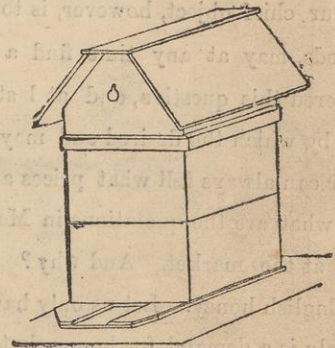
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ADDRESS TO SUBSCRIBERS.

"Beekeepers, like an angry swarm of bees
That want their leaders, scatter up and down."

—SHAKESPEARE (*Adapted*).

Mr. A. J. Cook, Professor of Entomology at the Michigan State Agricultural College, says in the preface to his very valuable "Manual of the Apiary":—"Every cultured apiarist laments that there is no text-book which possesses all of the following very desirable characters—simple style, full in its discussions, cheap, disinterested, up with the times."

Please substitute "journal" for "text-book," and accept the sentence as our excuse for now offering you the "BEEKEEPER." It is our intention to try, by all the means in our power, to make our paper deserving of the five epithets which Mr. Cook claims for his manual. If we succeed as well as he has done we shall be satisfied. He carried out the promises made in his preface, and in less than one year sold 2,000 out of 3,000 copies of the work, and a new edition was called for in less than two years!

In England the chief complaint made by beekeepers is that there is no demand for English honey. This is a great mistake. The Americans have taught us that good honey is saleable here, and we ourselves saw, a year ago, one order from a London house to a beekeeper in the South of England for five tons of run honey. Tenpence a pound was offered and refused, *for the owner of the honey could sell it all much better elsewhere!*

Whence, then, did this popular fallacy of there being no demand arise, and why does it remain, as it were, an article of apiarian faith? Surely this will account for it—there is no system, no organization, no spirit of co-operation among beekeepers. Our beemasters, by being so jealous of one another, only hurt their own interests. If they had at heart a laudable desire to promote apiculture to its utmost extent, would they not have a better chance of selling their hives, and would there not be a much-increased demand for hive appliances? To do away with this petty jealousy we shall open our columns for "full discussions," and thus enable the public to judge for themselves where they can best get what they want.

Our chief object, however, is to arrange a plan by which any beekeeper, be he the owner of one hive or of hundreds, may at any time find a ready and profitable sale for honey. For a long, long time have we carefully considered this question, and at last our patience has been rewarded, and we have succeeded, we feel sure, in finding a way by which the desired end may be obtained, provided only that beekeepers themselves will unite with us. A grazier can always tell what prices are ruling in the meat market. A farmer is aware, before he sends his produce away, what are the quotations in Mark Lane. Gardeners know what they will obtain when their fruit and flowers arrive at the market. And why? Because in all these trades there is *system!* So should it be, and so *shall* it be, with English honey. Let us only have some regularity, and we will then carry out our promises, and show that there not only is a demand for honey, but that there is an easy way of supplying that demand. It is no easy task we have undertaken, but we shall be all the better pleased when we have succeeded. In our next number our plan will be set forth in detail, and meanwhile we trust that each beekeeper will carefully consider this question—"Is it better that I should stand aloof and work by myself, or shall I gain by joining with my brother apiarians, striving with them to push the honey industry?"

We have said there is no organization with apiculturists. Do not imagine that we ignore the existence of that very deserving and painstaking body the British Beekeepers' Association. This Association has done a vast amount of good, and we, in publishing this paper, are anxious to assist it in its noble endeavours. At the same time, should we criticise any of its proceedings, we trust our remarks will be taken in good spirit. One of us, in a letter to the *Globe* on the 17th ult., gently gave the Association a hint as to how it might improve one of the advantages it already possesses. As at a game of chess, a looker-on often sees good moves unnoticed by the players themselves; so, too, we, as outsiders, may now and then observe chances that the members of the Association themselves may have passed over unheeded. So, too, with the Provincial Beekeepers' Associations that we are delighted to see springing up in all parts. We shall do our best to help them, but shall not shrink from our task if we see that finding fault may do them good.

The late Lord Lytton, in a note to "Pelham" on the duties of a biographer, says—"Observation should resemble the Eastern bird, and, while it nourishes itself upon the suction of a *thousand* flowers, never be seen to settle upon *one!*"

In all our criticisms, whether of honey, hives, associations, books, or what not, we shall faithfully follow this rule, praising where praise seems due, finding fault where fault exists, avoiding all personalities, acting openly and honestly. We make no pretence to be immaculate, but shall be pleased at any time to give publicity to complaints made against us, or faults found with our remarks or assertions.

While promoting the practical part of bee culture we shall not neglect the scientific. Many questions relating to the structure and habits of bees remain unanswered. What, for example, are the organs of hearing and smelling in a bee? Do the wondrously-formed and sensitive *antennæ* of the bee feel the vibrations of sound? Are smell and taste identical in bees? The united observations of our subscribers may elicit keys to these and other yet unsolved problems, while so many isolated students have failed. Even Huber, alone but for his servant, in his investigations made some egregious blunders!

Last, but by no means least, it will be our study to promote bee culture, and to increase largely the number of the lovers of the bee. Here we wish to enlist the aid of the clergy and other prominent gentlemen in our country parishes. Let them infuse a spirit of co-operation into the poorer beekeepers, and we will undertake that every man shall find a market for his honey. To serve as some sort of encouragement to beekeepers, and to enable those wishing to commence the profitable industry, we offer a prize of £10 10s. for the best pamphlet giving instructions in a plain way of how to make a bar frame hive with super and doubles, and we shall each month offer a prize of not less than £3 3s. for the best essay on some given subject, but we stipulate only that the writer shall be a subscriber to our paper. The particulars of our Prize Essays will be found on another page. We shall always give the subjects for two essays, so that, with the exception of the first, all the others will be announced two months before they need be sent us. In this way we shall ensure having well-thought-out papers.

One remark only need be added to the above. No one connected with this paper is pecuniarily interested in bee-keeping, nor will become so while he has anything to do with the journal.

Having said thus much for ourselves and our project, we now leave our journal in the hands of the beekeeping public, trusting that we may begin with, and long retain, a good mutual understanding.

OUR MONTHLY PRIZE ESSAYS.

Competitors should bear in mind that these Essays are intended for the *novice*, and not for the accomplished Bee-master. The style must, therefore, be as simple as possible. Technicalities should be avoided; but when their use is absolutely necessary an explanation should accompany them. *Take it for granted that the readers you are addressing know absolutely nothing of the subject.*

The Monthly Prize Essays will appear in the pages of the "BEEKEEPER," but the Proprietors will, when they think fit, publish them in a separate form for distribution.

RULES FOR COMPETITION.

1. Competitors must be Subscribers to the "BEEKEEPER."
2. All Essays must be legibly written, and on one side of the paper only. They must bear a distinguishing motto. A sealed letter must also be sent bearing on the outside a similar motto, and containing the full name and address of the writer, which will in all cases be published.
3. Essays to be returned in case of failure are to be accompanied by stamps for that purpose.
4. The Essay for which the prize is given will become the property of the Proprietors of the "BEEKEEPER."
5. Essays are not to exceed 1,500 words in length.
6. Essays must be sent to the Editor of the "BEEKEEPER" not later than the first day of the month for which they are intended.

NOVEMBER AND DECEMBER.

The Prize for November will be £3 3s., and that for December a like amount. The first should reach us not later than the 8th of November. All others should reach us not later than the first day of the month for which they are intended.

SUBJECT FOR NOVEMBER.

"WINTERING BEES."

In dealing with this subject the case of a cottager or other who owns only old-fashioned straw skeps, and who has no opportunity of obtaining better hives before the spring, should not be lost sight of.

SUBJECT FOR DECEMBER.

"STARTING BEEKEEPING."

TO THE EXPERIENCED APIARIANS.

THE thoroughly accomplished bee-master, should such an one really exist, if he reads through this number of the BEEKEEPER, will in all probability exclaim, "Here are thirty-two pages of printed matter all on subjects connected with the apiary, and yet not a notion or suggestion that is new to me! Evidently this journal must be intended for the beginner only."

We crave indulgence. The BEEKEEPER is not published only for the novice, nor is it intended only for the experienced. Its object is to bring the one into communication with the other. We invite the experienced to give us the results of their experience, that our beginners may know what may be expected from themselves, what stumbling-blocks they are likely to meet on the road to success, and what the value of ultimate success may be. We invite the novice to acquaint us with his difficulties and doubts, and we beg the experienced to help us to remove those difficulties and to clear up those doubts.

We are desirous, also, of bringing about a better acquaintance, more harmony, more forbearance, more emulation, and less envy than at present seems to exist amongst those who have attained any celebrity as apiarians. Our pages are open to the bee-keeping public, whether subscribers to our paper or not, for discussion on any point or points of apiculture which may be in dispute, or the publication of which may further the limited knowledge that even the best of us have in apiarian matters. We admit the letters on matters in dispute or doubt, and when all have been published we shall imitate the judges of our superior courts. We shall sum up the evidence as fairly as we can, but leave the decision of the case to the jury—our readers.

In more personal matters, such as the comparative excellence of different hives, we shall also endeavour to stimulate harmony and do away with needless jealousy. We shall allow every subscriber to state his own case, and say his own say, we ourselves giving partial favour to no man. Mr. A., no doubt, has as great a preference for the hives and appliances of his own invention and manufacture as a mother who thinks her own children better than those of anyone else. This is natural. Mr. B. has the same opinion of *his* hives. This also is natural. The mother, having always the interest of her offspring guiding her heart, sees other children who may be more prettily dressed or better behaved than her own. Does she, if she is sensible, feel it her duty to seek out the parents of these latter, and make the superior taste shown in the dress, or the more discreet tuition which has caused the better behaviour of the children, a matter for quarrelling and "naughty word throwing," as an American writer puts it? Not she! She goes home, tries her best to make the next frock even better than that which she has admired, and sets to work to get her children to follow the good example of those who were better behaved.

A man who wishes to make a perfect hive can only do so by looking for the good points and the faults of those made by other people. Let him imitate the good points and avoid the faults, and he will get on. But he does himself only harm if he wastes his time in calling his rival a fool for his mistakes, and a cheat for his successes.

If Mr. A. thinks his hive vastly superior to Mr. B.'s, let each send a description of his own make for publication in our columns, that the public may judge between them,

and that the science of apiculture may be enriched by finding good points in both.

We invite all hive-makers and inventors to write descriptions of their hives and other bee furniture to the BEEKEEPER. Our object is to promote and improve bee culture, and the same object should animate all beekeepers. Let the world know how the science and practice are progressing, and let apiarians choose for themselves which particular hive they intend to use. Our remarks on such descriptions, when we make any at all, will mostly take the form of questions, made with a view to further elucidate anything that seems to us not quite clear. We may point out instances of great similarity or wide divergence in the principles of different hives, but our readers will never find us loudly extolling Mr. A. to the detriment of Mr. B., nor will they ever be able to prove from our writings that we love Mr. A. personally more than we do Mr. B. At least such will always be our earnest endeavour.

We also invite those who carry on the honey industry to give us descriptions, in their own words, of their apiaries. We shall not ask the accomplished Mr. D. to give us an account of the extensive Bee-farm of the equally accomplished Mr. E., neither shall we desire Mr. E. to return the compliment. Mr. D., should he desire to acquaint the readers of the BEEKEEPER with what he is doing, and with his modes of operation, must himself tell them these things. All we ask is that he will write in as simple style as possible, that the uninitiated may understand as well as the experienced. There can be little doubt that such accounts will stir the interest of the general public, which has hitherto paid but too little attention to this most important subject of the honey industry, and it will simultaneously encourage and enlighten those who practise beekeeping only in a comparatively small way.

To avoid confusion, matters intended more especially for the beginner will be kept apart from those designed for the farther-advanced apiarian, and will appear towards the end of the paper. At the same time we beg such of our readers who have sufficient time, patience, and forbearance, to read through most carefully the articles written for the novice. We do not make this request under the impression that they will find there anything new, but with a desire that they will watch for any faults of omission and commission. When such faults are found, we shall feel obliged if our readers will point them out to us, that we may at once rectify them. If those who have spent many years in the practice of apiculture will thus help us to aid those who are but beginners, a better knowledge of the subject will be obtained, and we may look for a great impetus to the industry—results much to be desired by every lover of the bee, as well as by every lover of his country.

BRITISH BEEKEEPERS' ASSOCIATION.

The quarterly *Conversazione* of the British Beekeepers' Association was held to-day at 446, Strand, under the presidency of J. Jackson, Esq. Mr. T. W. Cowan read a paper of much interest on "Wintering." A lively discussion followed, sustained by Messrs. Hunter, Cheshire, Abbot, Glennie, Peel, Stevens, Baldwin, Lyon, &c. Mr. Glennie described an ingenious arrangement for screening hives during winter, and Mr. Cheshire detailed at length some discoveries he has recently made in methods of feeding artificial pollen to bees.

A MARKET FOR HONEY.

WE do not wish to enter with any detail into an explanation of our plan for establishing a market for honey until we have completed, as far as possible, all necessary preliminary arrangements. We should like, before we present a full explanation to our readers, to be in such a position that we need make no use of the small, but sometimes very troublesome, word "if." Nevertheless, it may serve to convince our readers that this most important question is not overlooked by us, and that we are really in earnest in promising to establish a system of selling if we say just a few words on the subject. A matter like this requires much deliberation, much action, much tact and discretion, and not a little time. We are now in communication with four of the leading London houses (we hope to be able to increase the number), and our efforts have met with much encouragement from them. So, also, are we corresponding with some of the best firms in the larger provincial towns. Our wish is to induce these leading houses to become wholesale receivers of honey, and all those in London whom we have addressed, and most of those in the other towns, are not only willing but *anxious* to adopt our suggestion. To supply these larger firms—these head depôts, as we may call them—we are writing to or seeing gentlemen in the smaller towns (we have chosen for preference market towns) who will receive any honey of a fair quality, and in almost any quantity from one pound and upwards, that local beekeepers may bring them. A price, almost regular, but naturally varying a little with the quality, or with the distance from, and expense of transit to, the head depôts will be settled, and we ourselves shall quote in each number of the BEEKEEPER the ruling prices, and, when we can obtain the requisite information, the amount of business done during the preceding month. We are using great care in choosing houses that are substantial and respectable, and our idea is to make all transactions in honey to be for cash. We shall publish the list of these collectors and receivers as soon as possible, and shall give timely notice of any alteration in or addition to the names of the honey purchasers.

Beekeepers in a large way of business, and who already have regular and good customers for their honey, may complain that we are interfering with their trade. To such we say that no business can be in a flourishing state when it is carried on by a monopoly. We remember being told of a case in point, which is *said* to have happened some years ago. A gentleman in the city received one Sunday a telegram from one of his foreign agents informing him that nearly the whole clove crop had been suddenly destroyed. He was short of ready money at the time, but took a cab, rushed round to every friend he could think of, and managed to borrow altogether a little more than ten pounds. This amount he spent in telegrams to his agents and others, buying up every clove that they could lay hands on. On the Monday morning the news of the failure of the clove crop became generally known, and *other* merchants spent money in wiring, but were just too late. The fortunate receiver of the Sunday telegram had now complete command over the market, and we can be sure that he used this power to his own advantage.

But we cannot see that we are doing any injury, but rather much good, to the beekeepers of whom we speak. They may be making twenty per cent. profit now, but the number of their transactions is limited; and by the aid we hope to give them we shall increase the business though we

may reduce the percentage of profit. Such firms as Meeking, Tarn, Shoolbred, &c., have obtained their enormous custom by trusting to small profits yet many buyers.

But these apiarans are not the beekeepers that we are most desirous of helping, nor are they those who most require help. It is the class of people, such as the Lincolnshire man mentioned in our article on "Village Bee Clubs," who have no means whatever of selling their honey at a reasonable price, to whom we offer our aid. Many gentlemen besides ourselves have considered this great question, and many plans have been brought forward, but have failed. The reason being that a matter of this kind requires more publicity, more continuous labour, and more combined effort than those whose occupation necessitates their attendance to other matters can give.

In some districts the cottagers and other small beekeepers can sell their honey regularly, and two or three of the larger apiarans have told us that their difficulty this year has been, not that the cottagers felt the want of a market, but that they (the apiarans who generally purchase of them) can find no honey. These districts, however, are the exception and not the rule, and the unfruitfulness of the English honey harvest this year is unprecedented.

We shall be thankful for any aid in this matter, and shall be glad to receive the names of apiarans or others who are willing to collect honey on their own account or on commission from the humbler beekeepers, that we may establish a complete system throughout the kingdom. Letters on this subject will not be published in the BEEKEEPER unless the writers desire it, or unless we should request and obtain their permission. Please address communications to "The Editor," at the BEEKEEPER office.

THE ROYAL COMMISSION ON AGRICULTURAL DEPRESSION AND BEEKEEPING.

WE append the heads of inquiry agreed upon by the Royal Commission on Agricultural Depression. It will be seen that the honey industry of England is ignored, while that of America and France is to receive close scrutiny. Never, perhaps, has so good an opportunity presented itself of obtaining the long-desired statistics of this important industry as carried on in our country. The British Beekeepers' Association numbers amongst its members several public men. Cannot these gentlemen be persuaded to use their influence to induce the Royal Commission to pay great attention to the English honey question? No thinking person can doubt that bee-culture, properly carried on, should prove a source of vast wealth to our country. It can be made an undertaking of large profit. It entails but little expense. It interferes with few, if any, other occupations. It can be carried on by the largest farmer and by the humblest cottager. Every authority agrees that it is an article of food, not only very wholesome, but nutritive and strengthening. One of our public singers says that, when troubled with hoarseness, he uses honey in preference to any of the scores of remedies that have been suggested to him. A lady, afflicted with a species of chronic bronchitis, affirms that honey gives her more speedy relief, and is more soothing than all the bronchial lozenges that were ever yet invented. Few things make a prettier table ornament than honey in the comb.

All these a milk-white honeycomb surround,
Which in the midst the country banquet crowned!

And yet we read (see the article on "Beekeeping" which

we have copied from the *Globe*) that in England we have not, on an average of the whole country, one colony to every square mile! English farmers are charged by their foreign rivals with being grossly ignorant of the scientific part of their business, and the Government, eager to improve the condition of farming, has been seriously considering the truth of this allegation. The result is, that the Science Department is now establishing classes all over the country to teach scientific and systematic farming. In other countries apiculture is considered an important branch of agriculture, and Mortimer's "Whole Art of Husbandry," published some 150 years ago, devotes no mean space to the subject. The Science Department would deserve well of their country if they were to take the matter in hand. Mr. Rose has already called attention to this subject in a letter to the *Globe*, and we now beg to suggest it, as a matter of earnest consideration, to the British Beekeepers' Association:—

The Royal Commission on Agricultural Depression has agreed upon the following heads of inquiry:—(1) Condition of farms; (2) condition of farmers; (3) the labourer; (4) land laws; (5) land tenancy; (6) agricultural education; (7) condition of estates; (8) agricultural statistics to be furnished by the Board of Trade; (9) returns of imports and exports of agricultural produce, to be furnished by the Customs; and (10) importations of agricultural produce from foreign countries.

1. Investigations are to be made by the assistant-commissioners as to condition of the farms in each district, under the following heads (for sub-heads to each of these, see A *post*):—(1) Arable farms (also see C and B); (2) grazing farms (also see D); (3) dairy farms (see also B); (4) sewage farms; (5) market gardening farms; (6) hop farming; (7) fruit-growing farms; (8) hill and moor sheep-farming (also see D); and (9) poultry-keeping on all classes of farms. The following sub-heads for the above have been agreed upon:—

A.—(1) Tenure (lease or otherwise), restrictions, if any, as to cropping and sale of produce; (2) live stock, implements, rent, labour, seed, manures, and feeding stuffs; (3) loans from bankers and others; (4) cost per acre of growing each crop, and yield of produce per acre. Under the "Cost" are included the questions of rents, rates, and taxes, seed, manures, cultivation by horse or steam power, labour, and tradesmen's bills and other expenses; while under the "Yield of Produce" are included the items of quantity of corn and other produce, and of price of corn and other produce; (5) causes which diminish the produce, and causes which depreciate the prices. Under the former causes are bad seasons, imperfect cultivation, insufficient manure, game, want of capital, and supply and quality of labour. Under the second class of causes are included foreign competition, inferior quality of produce, diminished demand, owing to bad trade, &c. (6) Causes which diminish profits, and probable remedies. Under the head of such causes will be considered the cost of carriage, adulteration of dairy and farm products, systems and cost of marketing and commissions to middlemen, and interest on loans. Under the head of "Probable Remedies" consideration is to be had of (a) extension of tramways in country districts, removal of restrictions on the use of traction engines, and railway rates; and (b) co-operation as to sales, and improved banking arrangements, reductions in charges, and commissions on sales. (7) "Improvements," under which head will be considered landlords' improvements, tenants' improvements, increase of capital invested by tenants in machinery, especially in steam cultivation, threshing, and other agricultural machinery; and in the purchase of additional live stock, feeding materials, and artificial manures.

B.—Condition of dairy farms (in addition to head A). Under the head "Produce" the following questions will be considered: (1) Number of cows kept per 100 acres; (2) prime cost of cows, whether bred or reared on the farm, or purchased; (3) yield of milk, butter, cheese, &c.; (4) utilisation of whey, buttermilk, &c., including rearing of calves, pigs, &c.; (5) cost of food not grown on the farm; (6) cost of labour in the dairy, including attendance and manufacture of dairy products, whether done by family or otherwise; also as compared with former years, and, if cows are let, on what terms; (7) mode of sales; (8) commission on sales; and (9) comparison of wholesale and retail prices. Under the head

“Yield” will be considered—(1) Gross sums received for the dairy products; (2) gross sums received for fat calves, pigs, or other results from utilising refuse; (3) gross sums received for cast cows; and (4) sales of other produce of the farm. Under the head of “Manufacture of Dairy Products at Factories; Cost of Manufacture at Factories,” the following matters have been put down for inquiry: (1) Rent and description of buildings, plants, &c.; (2) cost of management and labour; (3) cost and mode of conveyance of milk, including quantity per annum; (4) cost and methods of distribution of dairy products, including commission; (5) interest on capital; (6) cost as purchased food; (7) utilisation of whey, buttermilk, &c., including rearing and feeding of calves, pigs, &c.; (8) organisation and management of dairy factories in England; (9) financial results up to the present time; and (10) comparison of wholesale and retail prices.

C.—Under the heading “Condition of Arable Farms for Breeding or Feeding Purposes,” inquiry will be made as to (a) sheep farming in arable land. Under this head the following questions are to be inquired into:—(1) Number of breeding flock per 100 acres, or number of stores annually bought; (2) number of sheep sold, whether fat or lean, and at what ages; (3) use of artificial food purchased; (4) cultivation of special green food, other than grass and roots; (5) recent alterations in systems of farming, due to high or low prices, wet or dry seasons, disease, &c., including results of laying down arable land to permanent pasture; (6) systems and cost of marketing fat and lean stock and wool; (7) comparison of wholesale and retail prices; (8) greater or lesser profits from breeding or feeding. (b) Cattle keeping on arable land. Similar heads as to sheep farming on arable land.

D.—Under the heading “Condition of Grazing Farm,” the following questions are to be inquired into:—(1) Number of head of stock of each kind and age usually kept on the farm, and whether bred, and, if bought, at what ages; (2) number usually sold annually, and whether fat or store; (3) use of purchased food; (4) system of winter and summer feeding; (5) recent alterations in breed of stock or systems of management, if any, and the reasons for them; (6) system and cost of marketing fat and lean stock and wool; (7) comparison of wholesale and retail prices; (8) greater or less profit from breeding or feeding.

II. Under the heading “Condition of the Farmers in each District,” the following questions are set down: (1) Tenure of owner and occupier; (2) rent and tithes, including the manner in which the prices of corn for the purposes of tithe valuation are ascertained; (3) Imperial taxation, including the malt tax; (4) local taxation; (5) farm buildings; (6) house accommodation; (7) cottages for labourers employed on the farm; (8) recent profits or losses.

III. Under the heading “The Labourer,” the following are the questions agreed upon: (1) His condition; (2) principle and modes of living; (3) wages in money and in kind; (4) hours of labour; (5) house accommodation (cottages or otherwise), and rent, if any; (6) allotments and gardens, and cottagers’ grounds; (7) cows and pigs, and poultry, if any kept; (8) employment of women and children; (9) effects of the poor-law; (10) benefit, friendly, and co-operative societies.

IV. The Land Laws (an inquiry suggested for the commission itself): (1) Settlements; (2) powers of sale, transfer of land, and other powers of management and disposition possessed by limited owners; (3) mortgages and other encumbrances; (4) borrowing powers for permanent improvements, and extent to which they have been used; (5) Landed Estates Court, Ireland; (6) property of corporations and other chartered bodies and charities; (7) Church estates, glebes, and tithe commutation; (8) Crown lands; (9) duchy lands; (10) law of restraint and hypothec; (11) game laws and the laws of trespass; (12) powers of Enclosure Commissioners and Board of Works, Ireland; (13) copyholds and powers of Copyhold Commission.

V. Land Tenancy (suggested for inquiry and report in the first instance by assistant-commissioners): (1) Leases; (2) agreements; (3) land agency; (4) land valuation; (5) valuation of unexhausted manures and other improvement; (6) the working of the Agricultural Holdings Act; (7) agricultural customs; (8) the Irish Land Act in its bearings on Nos. 1, 2, 5, and 7; (9) Church lands in Ireland.

VI. Agricultural Education (to be investigated by the Commission itself):—(1) Agricultural colleges (higher education); (2) agricultural schools (intermediate education); (3) private pupils on farms; (4) instructions in agriculture in primary schools; (5) technical instruction in agricultural operations, including the making of dairy produce

VII. Condition of Estates:—(1) Tenure of owner and occupier; (2) extent; (3) nature and size of farms, and length of present occupation; (4) rents, whether recently reduced or otherwise; (5) farms unlet, if any, and causes assigned; (6) estate improvements, including buildings, drainage, &c.; (7) recent enclosures; (8) unenclosed and hill land, and its adaptability for profitable cultivation, as compared with the uses to which it is at present put; (9) woods and forests, their extent and management.

VIII. Agricultural statistics, to be furnished by the Board of Trade.

IX. Returns of imports and exports of agricultural produce, to be furnished by the Customs.

X. Importations of agricultural produce from foreign countries—(a) America (investigations to be made in England): (1) wheat; (2) maize; (3) cattle, sheep, and pigs (alive); (4) beef, mutton, and pork (fresh); (5) hams, bacon, and other preserved or cured provisions; (6) cheese, butter, and other dairy produce; (7) eggs, honey, &c.; (8) fruit (fresh and preserved). In each case to trace the cost of the articles at the American port, the freight, the profits made by the several middlemen, and to account for the retail price to the consumer. (b) France (investigations to be made in France and England): (1) Wheat; (2) barley, including special encouragement recently given to its cultivation by English brewers and French agricultural societies; (3) butter, including the methods of making up into uniform quality large quantities for export; (4) eggs, including the methods of purchase, packing, and preserving; (5) poultry; (6) honey; (7) fruits and vegetables, fresh and preserved; (8) beetroot and sugar and beetroot spirit, in regard to which will be considered the cultivation of beetroot as a farming crop, how far, more or less, profitable than other farm crops holding the same place in rotation, utilising of pulp for feeding stock; nature of beetroot farms, whether proprietary or otherwise; land tenure, including proprietary farming, tenant farming, métayer, leases, arrangements between incoming and outgoing tenants, &c.; laws relating to the ownership and inheritance of land; Government agricultural colleges, farms, schools, &c.; and Government rewards for agricultural improvements. (c) Holland (investigations to be made in Holland and in England): (1) Grazing live stock and exportation to England; (2) dairying and exportation of butter, cheese, &c., to England, and manufacture of artificial butter; (3) wheat productions and market gardening; (4) beetroot, sugar, &c. (same questions as in France); (5) management of land below the sea level; (6) systems of land tenure, especially the tenant rights of some districts; (7) laws relating to the ownership and inheritance of land; (8) Government and other agricultural colleges and farm schools; (9) rewards and advances by the Government for reclamations, and other agricultural improvements.

The gentlemen appointed to form the Royal Commission are: The Duke of Richmond and Gordon (president), Duke of Buccleugh, Earl Spencer, Lord Vernon, Rt. Hon. G. J. Goschen, Henry Chaplin, M.P., Col. Kingscote, M.P., Hunter Rodwell, M.P., Mr. Cowen, M.P., Captain Ritchie, M.P., M. Henry, M.P., Jacob Wilson, Woodhorn Manor, Morpeth; Robert Paterson, Birthwood, Biggar, N.B.; Charles Howard, Biddenham, Bedford; Sir W. Stephenson, K.C.B., Chestnuts, Uxbridge; Professor Bonamy Price, Oxford; W. Stratton, Kingston Deverill, Warminster; John Clay, Kerchesters, Kelso; and one or two others added since the prorogation of Parliament.

The Assistant Commissioners appointed under the Royal Commission are as follow:—

ENGLAND AND WALES.

Mr. John Coleman, who undertakes the inquiries to be made in the Northern District, comprising the counties of Cheshire, Cumberland, Durham, Lancashire, Northumberland, Westmoreland, Yorkshire.

Mr. Andrew Doyle, who undertakes the Western District, which comprises the counties of Gloucester, Hereford, Monmouth, Oxford, Shropshire, Stafford, Warwick, Worcester, and also Wales.

Mr. S. B. L. Bruce, who undertakes the Eastern District, comprising the counties of Bedford, Buckingham, Cambridge, Derby, Essex, Hertford, Huntingdon, Leicester, Lincoln, Middlesex, Norfolk, Northampton, Nottingham, Rutland, Suffolk.

Mr. W. C. Little, who undertakes the Southern District, com-

prising the counties of Berkshire, Cornwall, Devonshire, Dorset, Hants, Kent, Somerset, Surrey, Sussex, Wilts.

IRELAND.

Professor Thomas Baldwin and Major Robertson, J.P.

SCOTLAND.

Mr. G. J. Walker, who undertakes the Northern District, comprising the counties of Aberdeen, Banff, Caithness, Clackmannan, Dumbarton, Elgin, Fife, Forfar, Inverness, Kincardine, Kinross, Nairn, Perth, Ross and Cromarty, Stirling, Sutherland.

Mr. James Hope, who undertakes the Southern District, comprising the counties of Argyll, Ayr, Berwick, Bute, Dumfries, Edinburgh, Haddington, Kirkeudbright, Lanark, Linlithgow, Peebles, Renfrew, Roxburgh, Selkirk, Wigton.

UNITED STATES AND CANADA.

Mr. C. S. Read, M.P., Mr. A. Pell, M.P., and Mr. John Clay, jun.

FRANCE.

Mr. H. M. Jenkins and Mr. C. L. Sutherland.

VILLAGE BEE CLUBS.

No. I.

WE have been asked by many of the clergy and others to give a paper on the above subject, making suggestions as to how Bee Clubs should be started, and what set of rules should be drawn up for their regulation. This is not an easy task, and we must confess that it is one that we do not feel ourselves capable of carrying out. We think, however, that we might do much good by saying a few words on the subject, giving our own crude ideas, and inviting our readers to send us their criticisms and suggestions thereon. "In the multitude of counsellors there is wisdom." If all experienced beekeepers would put their "heads together," and well consider this important matter, in a short time we should be able, with their aid, to draw up a set of sensible regulations, and to show how best such Bee Clubs can be formed and carried on. And at a very early period we should doubtless have the extreme satisfaction of seeing Village Bee Clubs starting up all over the country.

The principle that should govern the formation of Bee Clubs should be, without doubt, that of all political economy: every man doing his fair share of work, every man depending more or less on his brother man, and all striving towards a great national gain. Much benefit may be expected from co-operation in bee matters. It was well remarked by Mr. Hunter, at a meeting of the British Beekeepers' Association, in February last, when the important question of a market for honey was being discussed: "The absence of demand for home-made honey was to be accounted for by the fact that cottagers did not make it up clean and neatly. Not one-tenth of the English honey was offered for sale in a state fit to be put before a customer in a respectable shop." The previous speaker, in decrying American honey, gave as a probable reason for its ready sale: "It was, however, neatly put up, and looked very beautiful." We were walking in one of the many very poor streets in Soho only a few days ago, when we were surprised to see a large wooden tray on which was about twenty pounds of comb honey, and an accompanying ticket announced that it was to be sold at eighteenpence a pound. The honey was really good; light-coloured and clear, the comb white. But it looked anything but tempting, massed together as it was, the tray stained and dark in places by honey that had been there in times gone by. This we were told was English honey. We were invited to taste, and found it delicious. Now, had this been "neatly put up," we may reasonably suppose that a much

readier and more profitable sale would be had. We made the suggestion, and the shopman agreed with us; but then, he added, "who is going to take the trouble over such little lots as we buy and sell?"

There was a valuable hint for small beekeepers. It might not be worth while to go to the expense which it would entail to "neatly put up" say twenty pounds of honey a year. Yet it would decidedly be worth while to go to the expense for ten times twenty pounds of honey! And naturally the expense would be proportionately less, for everyone knows that it is cheaper to buy two hundred labels and two hundred tins at one time than to purchase the same in separate lots of half-a-dozen or so. In a Bee Club one label and one uniform sized tin should do perfectly well for each individual member. And as it is cheaper to buy at wholesale than at retail prices, so, as far as honey is concerned at least, is it cheaper and more easy to sell large than small quantities. A Lincolnshire cottager was telling us that after trying for a long time to sell his honey this year at eightpence, he was glad enough to receive at last an offer of fourpence a pound! If he had had a quantity sufficiently large to make railway freight worth while, why need he have waited a single week for his eightpence? Many of the large beekeepers, who in the last unfortunate season had orders from old customers that they could not execute, would have "jumped" at the chance of buying his honey. At Hemel Hempstead, a fortnight ago, exhibitors were asking from two shillings to two and fivepence a pound!

Of course there are difficulties that may be raised about putting the honey into one common fund. It might be suggested, "Why mass the honey? Why not buy the tins and labels in the name of the Club, and deal them out to each beekeeper as he wants them, selling all the tins when filled at one time if possible?"

This, we fear, would be more difficult still; for while one man might put the purest and clearest honey into *his* tins, another, through ignorance perhaps, might fill *his* with a dark, foridding mixture of brood remains, honey, and pollen. The credit of the Club as honey sellers would be lost, and it is easier to lose a good name than to recover one.

From the foregoing we imagine that a Bee Club, to be successful, must resemble a kingdom and have some one in authority as supreme head. To him should all honey be brought. On him, or his representatives, should devolve the duty of weighing each lot, having the tins filled and labelled, and the whole quantity, or what portion there may be orders for, sent off. This need not take place very frequently. At stated periods the members of the Club should assemble in "solemn conclave," watch the honey weighed, record the weights, have it judged, and consider and decide among themselves, putting the question to the vote, if necessary, whether that particular lot of honey should be considered as first, second, or third quality.

As to preliminary expense. No period of the year could be better for the formation of Bee Clubs than the present. You want everything ready by the spring, and you have the winter months, therefore, for preparation. Take a hint from the "Goose Clubs," the notices of which we see placarded in most of the smaller streets of our large towns. They commence in the summer months, that provision may be ready at the festive Christmas season. Let Bee Clubs at once commence weekly subscriptions, that the hives may be prepared, and willing swarms ready to set to work at the proper season. Meanwhile study well what you will have to do when spring approaches. Buy one of the many

cheap and useful manuals that are published on beekeeping, have a weekly meeting, read the work aloud, discuss it well, and you will soon be at home in your subject. Do not, at first beginning, be discouraged if everything does not turn out with the most perfect success. Continue your weekly meetings, recite your experiences to each other, and you will receive all the great good that invariably arises from mutual help. Avoid, however, fixing your place of meeting at any public-house. True, old Mortimer, in his "Complete Husbandry," suggests that the bee-master, when he is going to do anything with his hives, should first bathe his hands and his face "in good small beer!" This, however, is not a practice, we should think, that any beekeeper would now indulge in. To study the subject well, and to become accomplished beemasters, you will want your intellects clear.

In cases where money is scarce a hint might be taken from terminable building societies. At stated times there is a ballot among the subscribers for an "appropriation," or, in other words, for an advance from the Society's funds to enable the drawer of the prize to buy or build a house. The subscriptions go on until every member has his house. Adopt the same plan for hives. But we doubt not that there are many of our large hive makers who would gladly make contracts with Bee Clubs to supply the necessary hives in a manner advantageous to all parties. A hint from the piano "Hire on the three years" principle, or "Furnish on the Hire System," might be taken.

The question of swarms suggests itself to us next. Here we would give the advice, "Never buy a stock (*i.e.*, a hive containing bees, comb, &c., complete) when you can do without it." You *might* happen to light upon one that contains the bee-moth brood, and then all that will be left you is to begin *di capo*. There should be no difficulty in procuring swarms, to commence with. A more intricate question, however, and one that we do not feel ourselves justified in dealing with, is: "Shall each swarm as it makes its appearance become the property of the Club, to be given away by ballot or otherwise? or shall it belong to the man from whose hive it appeared?" Each has certain advantages, but we think, on the whole, the matter is best left to the Club itself to decide. Be modest at first, and buy English bees; but, when your funds will permit it, purchase a Ligurian queen or two, and, with patience, your whole colonies can be made Ligurian.

The question of selling swarms need not be touched. For a long time you will be able to use all you get, if you are well supplied with ready hives.

The above remarks take it for granted that the Club hives are to be on the moveable bar-frame principle. Money may be too scarce for every member to commence the season with one of these. Must, then, all the tons of honey that our plants contain be allowed to evaporate, and, "Like the baseless fabric of a vision, leave not a rack behind?" We *trou not!* If you cannot get better hives at starting, use the old-fashioned straw skeps rather than none. They will get you honey and, more important still, plenty of swarms.

As to prices of moveable frame hives. Those for "Cottagers' Use" exhibited at the Hertfordshire Beekeepers' Association's show (reported in these columns) were marked in the price list at ten shillings, and we believe that they might be made for much less, especially when a quantity are ordered. Taking the price at ten shillings, and that of a straw skep at half-a-crown, one

season's experience alone will show how far more profitable the bar-frame hives are.

For ourselves, we will promise to insert gratis any advertisement from a genuine Village Bee Club of honey for sale, and will undertake that it shall be sold. For we are courting honey buyers as well as honey collectors.

For the present, then, we leave this subject, requesting all those who are interested, as we are, in the formation of Village Bee Clubs, to send us their suggestions "there-ant;" and, to repeat what we have already said, we shall doubtless be then able to offer advice as to the regulations, &c., that may be really valuable.

LADIES IN THE APIARY.

PERHAPS there is no class that finds it more difficult to increase by honest labour a limited income than the lady of small means. Gifted, as a rule, with a superior education, her mind and her tastes are refined. She has an appearance to keep up, and this alone is no small drain on her scantily-lined purse. And as there is no class to whom the means of earning something that shall help to eke out the household and personal expense would be more beneficial, there is no class that finds it harder to discover such a means. Those sharks that are always on the look-out for victims are aware of this fact, and the advertisements we so often see of employment for ladies bear witness to it. People who are acquainted with the ways of the world are aware that the most frequent dupes of this kind of swindlers are those who most need help; and ladies of limited means are considered by them as very likely "fish to fry."

Though these advertisements are not always *legally* swindles, they are generally *morally* so. Here is one:—

"EMPLOYMENT FOR LADIES.—Ladies may hear of a lucrative means of adding to their incomes by employment at their own homes. Send thirteen stamps for instructions and patterns to ———."

The letter is answered, stamps enclosed, and a reply comes. The anxious enquirer is told that if she will buy so much stuff, so many beads, such and such a quantity of braid, and a dozen or so of buttons (of which a price list is enclosed), she may be sure of always being able to sell at a considerable profit a beaded and embroidered jacket, as they are in fashion just now and are in great demand. No offer to purchase them at a certain price—no offer even to sell them on commission! But the poor lady, very likely living in some out-of-the-way country village, must herself find a buyer; and the "patterns" are nothing but printed slips containing an outline drawing or two of the jacket, and cost perhaps three shillings a thousand!

A few weeks ago there appeared in the advertising columns of the *Daily Telegraph* a notice to "Ladies desiring to add to their incomes." The work they were to do at home was to make braces and dress suspenders (printed pattern enclosed), but again there was no offer to purchase or sell.

Legally these advertisers are doing no wrong, for they offer "patterns" for their money. But we would advise all ladies who have not already been taken in by these advertisements to eschew them.

Then there are the Ladies' Work Associations. Whether these are *bonâ fide* in intention or not, they do but little good. When the work in *crewels* came into fashion many ladies of taste thought they had here a good opportunity of getting a little pay for their labour. But the wideawake manufacturers of such articles gave them no chance, for machine-made *crewels* appeared, as by magic, in almost every fancy shop in town. Other ladies that we have known have sent less pretentious but more useful work than this to the associations. We do not know how others succeeded, but these ladies, after paying an entrance fee of five shillings, had their work returned to them after a delay of twelve months.

How, then, are ladies of limited means to add to their incomes? There may be many ways, but we ourselves have

never heard of them. Very likely we shall be considered as foolish enthusiasts of bee culture, but we think it would be hard to discover any better, any easier, or any more profitable way for ladies living in the country or suburbs to increase their incomes than by beekeeping. What are its advantages?

1. It is an employment that no duchess need be ashamed of.
2. The outdoor-exercise, the pure air, and the sunshine that one enjoys with such an employment must greatly induce to good health.
3. It is not an occupation confined to only those who are in robust health. Several ladies, whose weak state of health has necessitated their leaving off other employments, have recorded that they have found restored energies and strength after attending to the labours of the apiary.
4. It requires but a small outlay, and entails but little expense.

5. It can nearly always be made profitable.
6. It can be regulated in extent according to the capacities or opportunities of the beekeeper.
7. It is as improving to the mind as to the body. No one who has the opportunity of frequently watching a hive can fail to be struck by the wonderful habits and instincts of the bees, and no thoughtful person can help meditating thereon.

Let our lady readers listen to some of the recorded experiences of American lady-beekeepers.

"But I can say, having tried both" (keeping a boarding-house and apiculture), "I give beekeeping the preference, as more profitable, healthful, independent, and enjoyable. . . . I find the labours of the apiary more endurable than working over a cook-stove indoors, and more pleasant and conducive to health. . . . I believe that many of our delicate and invalid ladies would find renewed vigour of body and mind in the labours and recreations of the apiary. . . . By beginning in the early spring, when the weather was cool and the work light, I became gradually accustomed to outdoor labour, and by midsummer found myself as well able to endure the heat of the sun as my husband, who has been accustomed to it all his life. Previously, to attend an open-air picnic was to return with a headache. . . . My own experience in the apiary has been a source of interest and enjoyment far exceeding my anticipations."

This lady commenced with but two colonies of bees, but her net profits from the first season were over one hundred dollars, the second year nearly three hundred dollars, and the third year about two hundred and fifty.

Another American lady apiarist says:—"I would gladly purchase exemption from indoor work, on washing day, by two hours' labour among the bees, and I find two hours' labour at the ironing-table more fatiguing than two hours of the severest toil the apiary can exact. . . . I repeat that apiculture offers to many women not only pleasure but profit. . . . Though the care of a few colonies means only recreation, the woman who experiments in beekeeping somewhat extensively will find that it means, at some seasons, genuine hard work.

. . . There is risk in the business; I would not have you ignore this fact; but an experience of five years has led me to believe that the risk is less than is generally supposed."

It is an exercise that one does not soon tire of. There is always something new and interesting about it—always something fascinating. The danger of stinging is infinitesimal—a bee being always very loth to sting. There is sufficient labour involved in the care of an apiary to give health and strength, but not enough to cause pain or undue fatigue.

In a word, ladies would find it much safer and a great deal more satisfactory to answer no more "Ladies' employment at home" advertisements, and to use the money thus saved in starting an apiary.

"FOR THE BLOOD IS THE LIFE."—CLARKE'S World-famed BLOOD-MIXTURE is warranted to cleanse the Blood from all impurities, from whatever cause arising. For Scrofula, Scurvy, Sores of all kinds, Skin and Blood Diseases, its effects are marvellous. In bottles 2s. 6d. each, and in cases of six times the quantity, 11s. each, of all Chemists. Sent to any address for 30 or 132 stamps, by the Proprietor, F. J. CLARKE, Chemist, Apothecaries' Hall, Lincoln.—Advt.

SUGGESTIONS.

WE receive two classes of suggestion—one referring only to the personal management of the BEEKEEPER, of which we have given specimens in the article "Personal"—the other consisting of those which should be submitted for the decision of our subscribers. When we receive suggestions that can be placed under the latter category, we shall, if we think them of sufficient general interest, place them before our readers with the hope that they will oblige us by giving us their opinions thereupon.

I.—SCOTCH BEEKEEPING.

It has been suggested that a special edition or a special department of the BEEKEEPER should be arranged for Scottish beekeeping, which is peculiar. We shall be happy to adopt this suggestion, but would prefer, at the onset, to make it a "special department." If we found we were sufficiently supported by our Caledonian friends we should then be glad to publish a separate edition for them. Though the extra trouble would probably be considerable, at least at starting, the extra expense would be comparatively little, and the benefit to apiculture might be great. We shall be obliged if Scotch apiarists will write us on this subject, addressing their letters to Mr. Rose, at the office of the BEEKEEPER. These letters would not be for publication, but we should give a *précis* of their contents in our columns when we informed our readers whether or not the suggestion was sufficiently well received to be adopted.

II.—A PERMANENT EXHIBITION OF HIVES.

One of the first subscriptions we received was from a gentleman who told us that, while he wished us every success, he thought we had, in trying to dispel jealousy and create a system, undertaken a task as difficult of accomplishment as the Herculean labour of cleansing and setting in order the Augean stables. And he informed us that we seemed to have much more faith in our ultimate success than he had.

"If you are going to establish a market for honey," he added, "can you not at the same time arrange some shop or other place in a leading thoroughfare in London where those who pleased could always have specimens of their hives, &c., on view and sale? I am not well acquainted with London, and am not sure of the exact locality of Catherine-street, but would it be practicable to open such a place in connection with the BEEKEEPER office? I suppose rents, especially in the most-frequented streets of London, are something fabulous; but it might be worth while to inquire how many hive manufacturers would go in for a thing of this kind. If you did not like to turn your office into a shop of this sort, a certain fixed charge might be made to exhibitors that would cover expenses, and a honey market or place of sale might adjoin or form part of the exhibition. If enough gentlemen would coalesce in this idea it would tend to greatly augment the honey and hive trade. I throw these out only as rough ideas, but you, perhaps, might put them into more ship-shape form."

This idea might lead to something—an association of hive-makers, with headquarters in London, would, we think, be useful. It has always seemed to us that such a society would be beneficial, while the severance of interested merchants, as merchants, from the Beekeepers' Association would create more confidence in the decisions of those associations, and would tend to swell their ranks with those who are beekeepers only, and with those who are purely interested in the encouragement of the industry among the

“cottager and agricultural labouring classes.” We do not suggest that hive-makers should cease to give aid to the existing Beekeepers’ Associations, or that they should withdraw their subscriptions. Far from it! We only advise them to keep their two personalities extinct. When at the Beekeepers’ Association meetings let them lend their thoughts and use their best endeavours towards the ends and aims designed by such societies. But what at a gathering of the Hive-makers’ Association, let them work as hard as they please towards an increased business.

It would be incompatible with our professions of independence for us to be connected with the management of such an association, or of such a permanent exhibition as that proposed. If we can give help towards establishing either of these we shall be glad to do so, and our columns are open for discussion on the subject. It is altogether a question for those most interested in the matter to decide for themselves.

THE PAST SEASON AND FEEDING.

BY AN OLD BEEKEEPER.

THE season 1879 has been generally one of promise, followed in nearly all cases by disappointment. It has been especially so in beekeeping. Hives have been full of bees—but of bees only. Swarming in most districts has been rare, and swarms, unless artificially fed, have died. In many parts of the country the feeding of bees has been carried on, with few breaks, throughout the whole season. Such a deplorable time for beekeepers has not been known, in fact, to any man living. The bees fertilized gooseberry, currant, and raspberry blossoms, and, consequently, these fruits were abundant in places where bees were kept; but apple, pear, plum, peach, and most other such fruit trees received very little help in fertilization from the honey bee, and the blossoms were too soon washed or blown off. Limes have been full of bloom, and in some cases bees have gathered well from these beautiful trees, while in others the bees did not get a chance of visiting them when in full bloom. Stock-hives, as a rule, have been kept well supplied with bees, breeding having been almost continuous, caused, of course, by the nearly regular yet small in-taking of honey, the bees seldom getting more than sufficient to feed themselves and their young. What honey was obtained was of a very liquid kind, and proved to be the very thing for the young brood; and then the total absence of anything approaching a honey glut, or a honey dew, kept the cells empty of honey and ready for the queens to lay eggs in.

And now that this wretched season is coming to a close those who really care for their bees must unbutton their pockets and buy food for them.

In wintering bees the first object is to induce breeding (as young bees winter better than old ones). This is done by stimulative feeding, *i.e.*, feeding slowly but continually with a syrup made of sugar and water, boiled and carefully skimmed. The proportions should be five pounds of best lump sugar to two pints of water. A tablespoonful of vinegar to clarify, and a teaspoonful of salt. The mixture should be boiled for at least ten minutes, and the syrup then left to cool. It should be given to the bees through the top of the hive by a bottle covered over with a strainer of canvas, and placed on perforated zinc, the bottle being set upside down. Pea flour (for artificial pollen) should now be sprinkled on deal shavings placed in a box, pan, or old hive, for without pollen bees will not breed.

After a week or ten days of this stimulative feeding the hives should be well stocked with brood in all stages, and syrup instead of honey. Now, if not up to weight, say 25 lbs., barley-sugar should be given in small quantities. The bees must be kept carefully covered up, no draughts through the hives. As bees should not be touched through the winter, now is the time for action.

Before beginning to feed the floor-board should be cleaned or changed, the edges of hives examined for the wax-moth, which attacks *poor* hives whether of wood or straw. The entrance of the hive should be reduced or made so small that only a bee or two can pass in or out at a time. The entrance being thus made so small prevents a draught through the hive, admits less cold air, and prevents stray bees robbing the hives. Bee food should in all

cases be carefully covered, so that only those bees for whom it is intended shall be enabled to get at it.

It will take years for the country to recover the loss of hives of bees during the season of 1879, and bees must not be only very scarce, but also very valuable and expensive. A great deal of the loss, however, may be attributed to the ignorance of beekeepers, leaving them unprepared when emergencies arise.

People who fail in beekeeping do so either by leaving the bees entirely to themselves, or by trusting only to other people. They either pay no attention to the advice or instructions of those more experienced than themselves, or they leave other people to do *all* the work for them. It is generally a good thing to receive advice, although it need not be always taken. Many of our well-known bee-farmers will gladly give advice (to those sending a stamped envelope fully addressed) on all the subjects of feeding, and how to make syrup and barley-sugar, or where to buy it ready-made.

[Editor’s Note.—The foregoing article is somewhat gloomy in tone. No doubt we *have* had an exceptionally bad season for honey getting, but it has been so very bad that, according to the law of probabilities, such another will not be likely to occur for some considerable time. Regarding the suggestion of advice, we shall be glad to receive for publication the names of apiarians who will, on receipt of stamped addressed envelope, give advice to beekeepers not so experienced as themselves.]

HONEY.

HONEY is a sweet viscid liquor, secreted in the nectaries of flowers, collected by the working bees, and deposited by them in the waxey cells of their combs.

Pure honey consists of a syrup of uncrystallisable sugar and crystalline saccharine grains, and is composed of only vegetable products, such as the sugars of grape, gum, and manna, along with mucilage, extractive matter, a little wax, and acid.

Virgin honey is considered the best, and is of a whitish or pale yellow, of a granular texture, a fragrant smell, and a sweet slightly pungent taste; it sets in cool weather, and receives, if pure, a semi-solid consistence.

The so-called Narbonne honey, when it is pure, owes its delicate flavour to the peculiarity of the labiate flowers, the chief of which is rosemary, upon which the bees feed.

Many examples of intoxicating honey are on record. The description given in Xenophon’s “Retreat of the Ten Thousand” is the most widely known. Examples of poisonous honey have often been recorded also, and the *Daily Telegraph* of only a few weeks back gave an account of some bees in the Burmah district which were cultivated merely for the sake of the wax, the honey, which was poisonous, being thrown away as useless.

Foreign honey is frequently adulterated with treacle, potato sugar, syrup, potato farina, starch, and wheat flour. The first may be detected by the colour, which is darker, and the odour. Chevallier gives us the following test for the presence of starch sugar or potato sugar. A small quantity of honey boiled for a short time in water containing two or three per cent. of caustic potash will remain colourless if free from starch; but it will turn brown, more or less intense, if starch sugar or potato sugar are present. Even two or three per cent. of starch sugar may be thus detected.

The presence of potato farina or starch is decided when the honey does not form a clear solution with water, and when it strikes a blue colour with iodine water.

When honey contains wheat-flour, and is heated, it at first liquefies, but on cooling it becomes solid and tough. The absence of starchy matter or flour is easily proved by boiling honey with water for five minutes, and allowing it to cool. If the honey is free from these matters a mixture of iodine water will *not* cause the preparation to assume a blue tinge.

Clarified honey is used largely in medicine. To clarify a small portion it is simply melted by heat in a water-bath, and strained whilst hot through flannel; or it is melted with one-third of its weight of water, skimmed, strained through flannel, and evaporated until it reaches the specific gravity—1.261. Honey is never employed in medicine without being

despumated—*i.e.*, clarified; despumation being the action of throwing off all excrementitious parts in scum or foam.

When honey is to be clarified on a large scale, one or other of the following plans is adopted:—

1. The honey is mixed with an equal weight of water and allowed to boil up to five or six times without skimming; it is then removed from the fire, and, after being cooled, it is poured on several strong linen strainers, stretched horizontally, and covered with a layer of clean and well-washed sand an inch deep; the sand is rinsed with a little cold water, and the mixed liquor is then slowly boiled until some of the water has evaporated and the honey becomes as thick as syrup.

2. As before, dissolve the honey in water, clarify with white of egg, and evaporate to a proper consistence.

3. Dissolve in water, add one and a-half pounds of animal charcoal to every twenty-eight pounds of honey, gently simmer for fifteen minutes, add a little chalk to saturate excess of acid (if required), strain it (or clarify as in No. 2), and evaporate.

4. Honey, 1 cwt.; water, 9 galls.; fresh burnt animal charcoal, 7 lbs.; simmer 15 minutes, add a little chalk to saturate free acid (if required), strain or clarify, and evaporate.

These are the processes in use in medicine, and we have a suspicion that these are the processes used by some of the merchants who ship to our country the honey that looks so temptingly clear. For raw honey has a crystalline character of which it is deprived when it is clarified. There would be no objection to clarify except that after the process has taken place honey is found to have a less agreeable flavour.

In bee and honey shows, where prizes are offered for run or extracted honey in glasses, it should be distinctly stated whether the honey should be raw, or clarified, or either, and the visitors should know which was which. The prettiest looking honey is not always the best.

Those who desire to clarify honey should avoid the use of copper or iron vessels and implements, as honey acquires a dark colour by contact with them. Berlin-ware, stone-ware, or well silvered or tin copper pans should alone be used.

Beekeepers, however, may find it useful to know that clarified honey is less liable to ferment than raw.

The following are some of the prescriptions in which honey is one of the component parts:—

HONEY OF BORAX (*Mel boracis*.)

Finely-powdered borax	...	...	...	1
Clarified honey	...	...	...	7

Mix.—Astringent, detersive, and cooling. It is employed in aphthæ, soreness of the mouth, excessive salivation, &c. A great improvement would be to dissolve 1 of borax in 1 of glycerine and then add 6 of honey.

HONEY OF COLCHICUM (*Mel colchici*.)

Dried colchici	...	...	...	1 part
Water (at 140 deg.)	...	...	...	16 "

Infuse 12 hours, strain, let it settle, and boil the clear liquor with white honey, 12 parts, to the consistence of a syrup. It rarely fails to allay pain and check a paroxysm in gout.

HONEY OF LIQUORICE (*Mel Glycyrrhizatum*.)

Honey and a strong infusion of liquorice boiled to a proper consistence—emollient, pectoral, and laxative.

HONEY OF MALE FERN (*Mel Filicis*.)

Ethereal extract of Male Fern	...	...	...	30 grs.
Honey of Roses	...	...	...	4 drs.

Mix.—For tape-worm. Dose.—One half at bed-time, followed by the remainder in the morning.

HONEY OF MERCURY (*Mel Hydrargyri*.)

Mercury	...	...	...	1 dr.
Honey	...	...	...	1 oz.
Oil of Cloves	...	...	...	½ dr.

Triturate till the globules disappear. It is chiefly used as an application to ulcers of the throat.

HONEY OF ROSES (*Mel Rosa*.)

Dried petals of the red rose (the leaves separated)	...	...	...	4 oz.
Boiling water	...	...	...	16 fl. oz.

Macerate for two hours, lightly press them in the hand, and strain; then add 8 fl. oz. more of boiling water to the roses, macerate for a short time, and again gently express the liquor; to

this add half of the first infusion, and set aside the other half; next add to the mixed liquors honey 5 lbs., and evaporate in a water bath, so that, the infusion which was set aside being added, it may become of a proper consistence.

Honey of roses is also made in the following manner:—

Dried rose petals	...	...	...	4 oz.
Boiling water	...	...	...	2½ pts.

Infuse for six hours, and gently squeeze out the liquor; after the impurities have subsided, decant the clear, add of honey 5 lbs., and evaporate, as before, to a proper consistence, removing the scum which forms. Used to make astringent gargles. It must not be boiled in a copper or iron vessel, as they will spoil the colour. The last form is that commonly adopted in the trade.

HONEY OF SQUILLS (*Mel scilla*.)

Thick clarified honey	...	...	...	3 lbs.
Tincture of squills	...	...	...	2 lbs.

Or,

Dried squills	...	...	...	1 oz.
Boiling water	...	...	...	¾ pt.

Infuse two hours, strain, add of honey 12 oz., and evaporate to a proper consistence. Expectorant, and in large does nauseant. Dose: ½ to 2 fl. drs.; in chronic coughs, hoarseness, humeral asthma, &c.

HONEY OF VIOLETS (*Mel Viola*.)

Clarified honey	...	...	...	2 pts.
Expressed and depurated juice of violets	...	...	...	1 pt.

It is gently laxative.

We hope at some future time to talk of other uses of honey than those of medicine.

MR. CHESHIRE ON THE TREATMENT OF FOUL BROOD.

THAT apiculture is now attracting more attention than it has received for many years past none acquainted with the history of the subject will deny. That it has advanced with giant strides through the introduction of foundations, the extractor, and other appliances that would make a long catalogue, is equally apparent; and yet amidst all this pleasant prospect, seeming to promise greater things for the future, a dark cloud—causing most to fear, and even breeding despondency in the breasts of not a few apiarians—is hovering amongst us. I allude to the existence and spread of the fell disorder foul brood. With the idea of diffusing and establishing the belief that this disease is understood on the one hand and curable on the other, so that well-founded hope may displace despair, and active measures for its annihilation be taken where it exists, I address myself again to this subject, and give a singular corroboration of our knowledge of the nature of the disease which has just occurred in connection with this journal.

Not long since a piece of super comb containing three small brown specks was sent to Fleet-street in a little box through the post, accompanied by a request that we should determine whether it was contaminated by foul brood. The practised hand of the postmaster had applied the stamp with vigour, and the specimen was so crushed that nothing could be made of it by unassisted vision. The nose applied to the brown parts when freed from honey seemed to indicate foul brood, the nauseous smell of which (we are writing for practical, not fastidious people) is not unlike the odour of extremely dirty socks, this odour being usually very strong in infected hives, but by no means invariably so. The microscope had now to resolve the difficulty, and by the use of an eighth objective and a deep eye-piece the micrococcus germs, the immediate cause of the disease, were found in tens of thousands in a speck of the brown substance diffused in a little water. The germs were accompanied by minute fibrillæ, as shown in the well-known Italian diagrams. The case was clear. The hive from which this super had been taken was foul-broody, and we so advised our correspondent, from whom we received a letter stating that a similar specimen had been sent to another authority, who had replied: "There is no sign of foul brood, but there are evidences of brood having been raised in it, and there is a little pollen, which adds to the discolouration." We reasserted our position that the hive was undoubtedly foul-broody, for had we not seen the disease? But in order that all doubt might be removed we paid a visit to our esteemed correspondent's apiary, and there found the fullest confirmation of our position, for the hive

pointed out to us in the absence of the owner as furnishing the super from which the part in question came was actually dying out from the advancing disease. The wrong hive, however, had been shown us; so a second visit became necessary, when we again met foul brood as in the previous case, though in a less advanced condition. The brown matter was not like pollen, in our opinion, to the eye, but under the microscope micrococci is no more mistakeable for pollen than heaps of loaves for heaps of dust shot. This episode in the first place establishes our knowledge of the nature of the disease, since its presence was detected, not by looking at combs half filled with rottenness or examining decaying grubs, but by discovering the presence of the cause of the disorder—the micrococcus, which, by growing in the body of the larva as yeast grows in rising dough, soon delivers it over to death and decomposition. It may be asked, "Although this microscopic examination is interesting, is it ever likely to be useful?" The answer is undoubtedly Yes, and a case in point has been given; for had our opinion not been asked we take it that our correspondent's apiary would have been ravaged, if not ruined, by the disease before he had become sufficiently alive to its presence to have taken measures for its suppression. But beyond such cases brood not infrequently dies from chill, and is known by the name of chilled brood, the appearance of which is so like to foul brood that the merely practical man would often be quite unable to determine whether the before-mentioned disease was present or not. Every beekeeper of experience has met this puzzle, which the microscope alone can resolve. With the exception just mentioned the appearance of infected combs, if the disease has made any progress, is so characteristic that all but the merest tyro could pronounce upon it. In looking into a card of unsealed grubs, which while healthy are all of pearly whiteness, one here and another there may be noted of a yellowish sickly tone, and these usually—instead of being posed, as Swammerdam says, "curled up at the bottom of the cell like a dog asleep"—are thrusting their heads forward towards the cell mouth. This indication is very marked in unsealed brood. These grubs sometimes die before the period of sealing, and their bodies, as experiment has proved, are occasionally removed by the bees and dropped at a distance from the hive; but more generally they pass through the phases of decomposition, shrinking and turning brown, while the water continues evaporating until nothing remains but a blackish brown scale on the lower side of the cells. It is in this condition that they become the infectors of the rest of the hive, for now the minute germs of the micrococcus are given off in immense numbers, and flying through the hive find their way into every part. Other grubs are attacked until the exhalations from the dead nauseate and dispirit the whole population. The fanning at the door carries out these germs in myriads, which are thus diffused, to be taken with the indraught into neighbouring colonies. The complex hairs of the bodies of the workers must hold them in their meshes, and in fact in every corner of the apiary will soon lurk these minute possible ministers of death and destruction. But many of the grubs do not die until after they have been sealed, and so in inspecting an attacked comb we shall notice that the patches of sealed brood are very irregular in colour. Each darker cover lying over the coffin, and not the cradle of a young bee; others, which conceal the bodies of those long since dead, will be pierced by irregular holes, and the cover, instead of being convex, will be sunken and rather glossy instead of dull in surface. When the covers are removed the rotten remains brown, fetid in odour, and so viscid that they may be drawn out in threads like treacle will be discovered. With this description the owners of frame hives need have no doubts, except the suspicion of chilled brood, for which some explaining cause can always be assigned.

To the ideas of Mr. Pettigrew, as expressed by him in the journal of June 19th, I have previously taken exception, but did not refer to the general sweep of his opinions respecting the carrying of the disease by the bees, and from which, if I understand him aright, I dissent in the most absolute manner. I quite agree with his fact when he says, "We have known swarms leave the disease behind them and thrive well in new hives;" but his implied inference is most dangerous, especially when coupled with the remark, "We have never known swarms from diseased hives carry the disease or germs of the disease with them." If this be a general truth it is honest in a dealer to take a swarm from a hive saturated with micrococcus, and send it into a healthy district. On the contrary, I agree with the editor of the *American Bee Journal* that "it is criminal." Swarms from diseased hives may do well themselves, and yet infect the district into which they have gone, for reasons that ought to be apparent. The first of

their brood may in a few cases get infected from germs carried about their bodies, and yet by the removal of the dead, as previously explained, the disease will be eradicated. Experiment has shown that introducing spores into hives does not in the greater number of instances from this reason establish the disease.

The curability of foul brood is the next point upon which I wish to insist. While we feel sure that the doctor can do us no good we will not take his medicine, and while beekeepers believe that foul brood must run its course and work out devastation and ruin nothing will be done to arrest it. I assert its curability because I have again and again cured it, and in this position I am pleased to be able to refer to one of the most prominent, certainly one of the most scientific and successful, apiarists of our day—T. W. Cowan, Esq., Chairman of the Committee of the British Beekeepers' Association, whose experience in the treatment of this malady has been great, but not greater than it has been successful. Mr. Cowan, in reply to a request that he would permit a publication of his methods, has favoured me with a lengthened letter, in which he says—"I am quite, I think, of your opinion as regards foul brood, that it is to be cured if attacked in earnest. You know I had it in my apiary, and it was a source of great trouble to me, but I stamped it out with salicylic acid. My proceeding was to excise any very bad places, and when I found cells affected here and there I merely uncapped them and sprayed the combs with the solution of which I send you the recipe. I found generally in mild cases one application was sufficient, but in more severe ones two or three doses produced a complete cure. I found that if the cells were uncapped before they were punctured and sprayed with the solution, injecting a larger quantity into the affected cell so as to eject the viscid mass, there was no fear of the disease appearing again. In this state the viscid fluid in the cell is of a light brown, and is not permeated with spores to such an extent as when it is allowed to remain until it becomes highly coloured and the covering much depressed. I doubt very much if in this stage it is very contagious. I have no doubt the acid acts on the spores and destroys their vitality. So far so good. Now as regards the honey that is in the hive, and which is supposed to contain the spores (although I must say I have never been able to detect any by the microscope), how are we to ensure their being destroyed? Simply by uncapping it and feeding the bees on syrup containing the acid, which they will store with the uncapped honey, or uncap it and give it a good spraying with the acid solution. I have done both, but cannot say if it was really required; but as I think prevention is better than cure, and as it is not much trouble, there can be no harm done.

"All my hives are scalded, and so is everything that has had anything to do with the hive, and afterwards everything is washed over with the solution. I believe the germs of the disease are carried in the air, and we can never feel safe; I therefore, always put acid in all the food I prepare. I examined six of my hives, and all were healthy but one, and that I thought was also healthy. It was an early swarm. This year I had thrown off a swarm and a cast, and had given me six small 1 lb. sections nicely filled. I looked on the ten frames and found no queen and no brood. There was one cell covered, but not punctured, but I at once recognised it as a foul-broody one. Now the hive had not been queenless very long, as about ten days ago I saw the queen, and although she was not laying there was a small quantity of brood hatching out, and all did hatch out except this one cell; it was uncapped and injected with the solution, and the other combs and bees sprayed with it. I have no doubt it will prevent its spreading in the future, as I shall not hesitate in using these combs in uniting if I require them.

"I have examined six hives to-day, fearing to find foul brood, but have not detected a single cell in any of the other hives. Now, how did this appear? It seems to me probable that it was brought there by some of the bees from outside, or a spore might have been lurking in some of the corners of the hive and had escaped the solution. This proves to me that it is impossible to tell when it may break out in an apiary; and as we know from experience that salicylic acid destroys the spores, I think it not only beneficial but important that a certain quantity of this acid should be in all the food given to the bees. Two years ago I tried feeding the bees on syrup containing a strong dose of acid without spraying the combs, and I found that the disease gave way to this treatment; but I find the other plan, that of uncapping and spraying, the most rapid. I do not mean to say if a hive is neglected, so that all the brood is rotten, it can be cured; but if taken in time, as every apiarist would do, it has been and can be cured.—THOS. WM. COWAN."

The table of recipes Mr. Cowan encloses will explain themselves.

TABLE.

Salicylic acid solution for mixing with syrup for feeding bees, painting over hives, and syringing combs, &c., for the prevention of foul brood.

Salicylic acid	1 oz.
Soda borax	1 oz.
Water	4 pints.

Spring and summer food for bees:—

White lump sugar	10 lbs.
Water	7 pints.
Vinegar	1 oz.
Salicylic acid solution	1 oz.
Salt	$\frac{1}{2}$ oz.

Boil for a few minutes.

Autumn and winter food for bees:—

White lump sugar	10 lbs.
Water	5 pints.
Vinegar	1 oz.
Salicylic acid solution	1 oz.
Salt	$\frac{1}{2}$ oz.

Boil for a few minutes.

Some remarks upon the action of salicylic acid, and the plans I have myself followed, I must reserve, through pressure of space, till next issue.

The great importance of the question of foul brood and the urgency with which remedies are called for has been evidenced by the number of letters I have received since I have addressed myself to its consideration in the columns of this journal. After giving, by Mr. Cowan's kind permission, his plan of operations, I promised to say something of the method I had adopted, and by which success of a very marked kind had been obtained, but before entering upon this it may be interesting to speculate as to the reason salicylic acid effects a cure, and as to how far it may be employed to ward off a chance attack without injury to the bees. Salicylic acid has been found to act upon the human system as a retarder of oxidation; in simple words, it reduces the rate at which waste goes on in the body, but as a natural consequence it lowers vital action and interferes with the production of animal heat. Carbonic acid is given off in reduced amount by an animal to whom a large dose of salicylic acid has been administered. Now it is well known that the growth of fungi is always attended with the production of carbonic acid; so it is, perhaps, probable that salicylic acid is a fungicide, as Cork calls it, or an enemy to fungoid life, because it arrests that very process which is a vital action of the fungus. If this be true, or even if it be not, we now see that, perhaps, some disadvantage may arise from an excessive use of the remedy. I note this because I am glad to be able to testify to feeding continually, with no observable bad effect, with food containing four or five times as much acid as Mr. Cowan recommends; and as his strength was curative, of which we have his evidence, we see that it is safe to use even more of the remedy than is demanded by the disease without appreciable injury to the patients. Mr. Cowan's mixture for spraying combs and painting hives is about one-eightieth part by weight salicylic acid; while Mr. Hilbert effected an absolute cure by spraying with a mixture containing one part of the remedy in 150 water; and Muth, who first suggested borax for the purpose of rendering salicylic acid more soluble, used a mixture consisting of one of the latter diffused in sixty of water.

In treating an infected hive it should be remembered that cutting out the combs dotted with dead grubs and then allowing the bees to build again not only does not remove the infection, but it weakens the stock. This plan, which is the one expedient of some who should know better, is about as intelligent as would be cutting off a man's leg to cure him of scarlet fever. The honey left to the bees has been dusted by the spores before it was sealed, and there these remain to be given in the pap the nurses are always dispensing to the wanting babies. The disease is thus left to establish itself anew, giving more work to the exciser of combs, till the poor colony dies of disease and the doctor. When combs are in a very decomposed condition they may have to be taken away; but I do not believe, rather I have not found, this step to be generally necessary. It is in my opinion far more necessary to remove the store; for, supposing the honey to carry no infection, it is at least the means of preventing our remedy being given to the grubs. Remove the store and feed with syrup containing salicylic acid, and the bees themselves in nourishing their progeny become the dispensers of the drugs we have provided. While this feeding is going forward we periodically, about every three days

at first, inspect the hive, and lifting out the combs singly, we open with a penknife all cells supposed to be diseased. The spray producer is then called into play, and the fluid for this spray I always use as hot as possible, for if it were boiling in the vessel it comes out in so fine a rain that evaporation immediately cools it completely.

The apparatus which has carried me through all the treatment necessary for many cures is Maw's shilling scent-diffuser, consisting of an indiarubber ball, a small bottle with screw neck, and the necessary tube adjustment. The bees are chilled and tightly grip the comb, but they quickly recover when the hive is shut. The next inspection sees the before-explained process repeated; other cells are opened, all are sprayed, and thus in a few times no cell in the hive but has received some of our fungicide, and the disease succumbs. In milder cases no more than this will be needed, but in neglected ones the worst broodcombs had better be replaced, and the hive changed, the old one being thoroughly washed with strong salicylic acid solution. The idea that the queen should be removed to stop the production of brood and give the bees time to clean the combs is not, now at least, to be entertained. Where foul brood exists in any hive in the apiary none are safe, and most are in all probability already tainted, so that feeding with salicylic acid syrup is at all times desirable. My practice, as I stated previously, has been to give about thirty grains—a small teaspoonful—of acid with each 14 lbs. of sugar made into syrup, Mr. Cowan using only eight grains for the same amount; and from my larger quantity no bad symptoms have arisen, while no trace of foul brood has appeared in any hive for two seasons. The Rev. G. Raynor lately informed me that he thus always added salicylic acid to all food given in his apiary, and that he has had perfect immunity from any attack. This medicated syrup is simply made by adding to the sugar and water as it is heating on the fire the required quantity of salicylic acid, to which previously about a quarter of its weight of powdered borax has been added.

America with its large apiaries would have suffered awfully from the ravages of this enemy had it not been for treatment, but the intelligent apiarists of that country have so well fought the disease that it is disappearing from amongst them. So let it be with us. Our neighbours the Germans have found us a remedy; let us use it and spread its fame abroad until foul brood shall become a curiosity.—*Journal of Horticulture.*

BEEKEEPING.

THE following interesting article appeared lately in the *Globe*. We commend it to the attention not only of the initiated, but to the uninitiated too. While it should encourage beekeepers to make progress, it should tempt non-beekeepers to follow their good example:—

It has always been a matter for regret to all thoughtful persons that the keeping of bees in this country is more systematically neglected than any other industry, and that, in consequence, a most valuable gift of nature to man is ruthlessly and persistently wasted. In 1874, when the British Beekeepers' Association was formed, Mr. John Hunter declared that for every hive at present in this country there ought to be a thousand, and that for every pound of honey gathered a ton was lost. It appears from some recently-gathered statistics that in the United States of America, as in this country, there is a great opening for beekeeping, and that, as compared with other countries (those of Middle and Eastern Europe especially), we are far behind. As the industry is one which hundreds of people can carry on without interfering with their regular occupations, and which might serve to give employment to many now seeking labour, or additional income to many in straitened circumstances, we now direct attention to the subject. It is an industry that is not over-worked or overcrowded, and that offers reasonably large and sure profits, because for its products there is always a demand.

From some recent inquiries by the statistician to the Department of Agriculture at Washington, it appears that there are in the United States only 136 professional beekeepers, while it is estimated that about 70,000 persons altogether kept bees, and these send to market about 15,000,000 lbs. of honey and wax yearly; and if we compare these figures with a report made to the Government a few years ago by Mr. Quinby we have some startling results. That gentleman declared that, on an average, every acre of land in the States—after allowing for waste, and the fact that it was impossible that the industry could be worked to more than one-third of its

limit—should produce 1lb. of honey per annum. And he did not, in this estimate, exclude cities, for he points out that bees will find excellent materials for honey in the refuse and garbage as well as in the few green spots of those places. America contains 1,897,146,240 acres in its national domain, and if 50 per cent. of this area is deducted for utterly uninhabited localities, the yield should be 60 times greater than it is. Proceeding a step further, the statistician tells us that “every pound of honey is worth, on an average, 25 cents, and a pound of wax 30 cents. Taking the return for 1878 as a basis, the estimated value of the annual product is—wax 189,338 dollars, and honey 3,676,703 dollars, or a total of 3,866,041 dollars. This is only 1-62nd of the value that ought to be produced (i.e., 240,000,000 dollars), and there is, in consequence, a waste of 236,000,000 dollars’ worth of valuable produce, which evaporates into the air. A gentleman in California, to whom an enquiry was addressed, declared that in the Golden State alone “the amount of honey lost yearly exceeds in value the quantity of gold gathered in the State during the same period.” Upon these figures and reports attention is drawn to this neglected industry, and as the subject is one equally important to the people of this country, the reproduction of the statement cannot fail to do good service. So far as this country is concerned, we are, in this matter, far behind any other civilised country, and yet, with our rich clovers and grasses, we ought to be among the first. In the rural districts of Russia hives are found everywhere, and in one (Ickaterinoslav) there are four hives to every human being. Buschen, no mean authority, declared the quantity of honey annually produced in European Russia to be from 600,000lbs. to 700,000lbs., together with a proportionate amount of wax. In Germany there are large numbers of apiaries, and some contain, in close proximity, from 200 to 300 hives. One bee-master has 1,000 hives in three separate establishments, but sufficiently near to be visited in half-an-hour’s ride. As many as 4,000 hives are often to be seen congregated together at one point on the heaths of Germany. In Russia and Hungary from 2,000 to 3,000 hives in one apiary are frequent. In Hanover it is calculated that there are 141 hives to each square mile, and a German professor stated in 1877 that “the bees of Lunenberg pay all the taxes assessed on their proprietors and leave a large surplus besides”—and this in a district so barren that it has been called the Arabia Petrea of Germany. We could go on multiplying these statistics *ad libitum*, but we will content ourselves by giving two more, and both are on Mr. John Hunter’s authority. Formerly the Island of Corsica, comprising 3,790 square miles, paid to Rome an annual tribute of 200,000lbs. of wax, and this presupposed a reduction of from two to three million pounds of honey. In East Friesland, a Dutch province, there is now maintained an average of 2,800 hives per square mile. All these figures show that the capabilities of land to carry an enormous number of bees are not overstated, and prove conclusively that there is ample room for a large increase in the business of gathering honey in this country. It is impossible to obtain statistics relating to Great Britain, but when we state that the highest estimate made as yet is that we have not on an average of the whole country one colony to every square mile, the utterly ridiculous proportions of the industry, as compared with what it might be, will be apparent. And yet Mr. Pettigrew has told us that the heather on the English moors alone would be sufficient to feed and keep all the bees in the world, and also yield in a good season a surplus of honey and wax equal to that produced in all the rest of the world. This is a startling statement, but we see no reason to doubt its accuracy.

The argument in favour of beekeeping has been frequently put by persons of authority, “If you would thrive, keep bees,” was the famous dictum of an Irish Bishop to the peasantry of that country. Corbett, in his usual terse style, put the case very clearly. “Bees,” he said, “are of great use in a house, on account of the honey, the wax, and the swarms they produce; they cost nothing to keep, and want nothing but a little care.” The great improvements in bee machinery and in our scientific knowledge since Corbett’s time increases rather than diminishes the force of the argument. But an argument in favour of an industry requires something more than a statement of its advantages to the individual engaged in it and to the community at large. It is also necessary to show clearly that it can be conducted profitably, and here we have no difficulty. According to all authorities there can be no doubt in the world but that in a good season the profit is large enough to tempt the most usurious, or that in the worst possible year the loss—at the most a few pounds of brown sugar—is so small that the most miserly need not be afraid of the risk. Mr. Pettigrew—the son of the “old bee man,” of Carluke, in Lanca-

shire—made a profit of the business at the rate of £2 11s. 8d per hive per annum on an average of six years; but he was noted as a skilful apiarist, and such a result must not be everywhere expected. Mr. Hunter and other authorities estimate that the cost of a swarm of English bees would be about 15s., and the cost of the wear and tear of hives 2s. per annum. For this the return should be at least 25lbs. of honey, value 25s.; three or four pounds of wax, worth 4s.; and a swarm of bees, 15s. Thus the first year’s outlay would be more than returned that year, and in after years £2 per hive profit might be expected. In good years, when two or more swarms turn out, or when the super of 50lbs. or 100lbs. gladdens the eye of the jubilant beekeeper, the profits will be correspondingly large. This profit ought to be sufficient to tempt a much larger number of persons to keep bees than at present do so, and we advise all our readers having a garden, or living near fields or in rural districts, to see if they cannot add a little to the natural productions of the country by assisting to save that “sweetness” which is at present “wasted on the desert air.” The amount of this waste is enormous. A 20-acre field of grass, well-sprinkled with the flowers of the white clover, will yield 100lbs. of honey per day, and a piece of moorland the same size with heather in flower will yield 200lbs. of honey per day, and yet in each case enough will be left to scent the air as well. Pettigrew tells us that in one garden—and not a very large one—he has seen 50 hives standing, the strongest of which has gathered 5lbs. of honey per day in fine weather, and the weakest 3lbs.

There are three classes of persons to whom we would recommend this industry:—(1) Capitalists; (2) farmers and cottagers and railway servants; and (3) that large body of business men who have “a place a little way out.” We believe that a man with a little capital would find it profitable in the districts of the moors or of good grass lands to start colonies of bees in which the hives number hundreds; and a few such men would find little, if any, difficulty in getting a skilful attendant at a reasonable cost to look after them. To farmers and cottagers the value of bee-keeping ought to be well known, and to them we would only remark that the peasantry of Russia use honey instead of sugar, and yet produce sufficient in many cases to have enough to sell to pay their rent. Railway servants, and especially signalmen, have special facilities for placing a few hives along the various lines of railway with which the country is intersected, and, if they could be induced to take the matter up, the result would be pleasing to themselves at any rate. Any one living in a rural district could keep quite fifty hives of bees without interfering with his ordinary occupation, and they would gather a golden harvest for him from his neighbour’s lands without let or hindrance; for, as Crabbe tells us—

“He fears no bailiff’s wrath, no baron’s blame,
His untaxed and undisputed game.”

To the city man whose relaxation from business is the study of nature, and who sees more beauties in country life from the fact that most of his career is passed in the smoky and confined atmosphere of the city, what can be more interesting than bee-keeping, and how much will that pleasure be enhanced by the fact that his own stock of luxuries is increased by his keeping them, or by the fact that they add to his profits! Some of the best men of the past and of the present have derived much of their pleasure and instruction from the study of the habits of the bee, and there is no thoughtful person who cannot derive instruction from such a study. But there is still another class to whom we must appeal, and we think successfully. Bee-keeping is specially a work for which ladies are fitted, and which they are able to follow in its every branch, and herein it is of special advantage. The honey and wax it brings into her stores will make the housewife take to the industry with pleasure, and the bees she will watch with love and admiration. It is to a wide field of workers that apiculture appeals, and when we look at the question in all its bearings we are astonished at finding it such a neglected industry.

E. SMITH, Esq., Surgeon, Sherston, writes:—“I have tried BUNTER’S NERVINE in many cases of severe Toothache, and in every instance permanent relief has been obtained; I confidently recommend it.”—Advt.

ADVERTISING AS A SCIENCE AND AS A SUCCESS.—Those desiring to advertise to the best advantage should read an article on the above subject included in the contents of “May’s British and Irish Press Guide and Advertiser’s Dictionary and Handbook.” Price One Shilling, or by post 1s 3d. Published by FREDK. L. MAY and Co., Advertising Agents, 159, Piccadilly.—Advt.

THE MONTH.

ALTHOUGH the past year has been exceptionally bad, or, rather, for this very reason, beekeepers will be more than ever compelled to take care of their hives and of their bees during the coming winter. It is true that, the Arctic Seas and the Scandinavian Gulfs having been free from ice exceptionally late in the present year, we may expect a mild winter. Reports that we have received from Tornea (the most northern part of the Gulf of Bothnia), from Abo (at the south of Finland and north of the opening of the Gulf of Cronstadt), as well as reports from Stockholm, Gottenberg, Christiania, Stavanger, Bergen, Drontheim, and Vefsen confirm this, the season there this year being as far below the average of cold as it was exceeded by that of last winter.

Beekeepers, however, find comparatively little trouble in guarding their hives against the cold, be it never so severe, as they have in warding off the dangers that arise from wet weather. All hives, therefore, that stand on ground that is at all inclined to dampness must receive attention. If the hives are at all low on the ground, so as to run the danger of absorbing rain or dew from grass on which they rest or touch, they should be raised. We believe that no stand is better for a hive than that made by a few loose bricks, the great advantage being that the brick absorbs no moisture, and allows a free current of air to pass uninterruptedly underneath the hive. Another deep stand that has been often recommended is an earthen drain-pipe. This is placed in a vertical position, one half being buried in the ground. The pipe is then filled with earth (loose bricklayer's rubbish would be better, as not retaining so much damp), and the hive placed upon it. We do not, however, believe in the plan, this pipe generally becoming a home for all the insect pests that delight in such a refuge. It is also dangerous to the hive in case of a high wind. Neither does it allow the same freedom of passage for air beneath the hive as a foundation of bricks would.

Bees all through this unfortunate season have required more than usual feeding, and it is only to be supposed that in the scarcity of the honey, beekeepers will have allowed but little to remain in the hive as food for the bees.

Those who make so many professions of practising humanity to the bee should always bear in mind that, although it is one of the dispensations of Providence that a bee shall, when it is possible, gather much more honey than it can possibly want for its own winter supplies, no man is acting honestly by them who takes every drop of honey that they bring into the hive.

Naturally, honey is the best food a bee can have, but in cases where bee-masters have neglected this consideration, or where the bees themselves have not been able to collect sufficient supplies, the apiarian must, if he has an eye to profit, help them out. Let them remember that although food may cost a few extra shillings this winter, swarms and stocks next year will in all probability fetch a higher price than has been known for a long time. It is an ill wind that blows no one any good, and the mishaps of the past season will only tend to increase next year the profits of those who have, either by judicious care or good fortune, managed to keep their bees through it.

Hives should be thoroughly overhauled. The careful bee-master will see that his hives are weather-proof, that the wood is neither rotten with damp, nor cracked or warped by heat. Draughts in a hive are bad for the colony, damp-

ness is certain death. While the entrances are narrowed, care must be taken that they are not too much limited. Air is necessary to the well-being of the bees, but not draught. The supply of provisions for the colony should be examined, and in cases where it is found insufficient for the maintenance of the bees through the winter, feeding should take place, that the bees may store up enough to keep themselves comfortably. No delay should be allowed in this matter, for hives should never be disturbed in winter. Combs should be examined, and all traces of the bee-moth or other enemy to the hive should be destroyed. Old combs must be melted down—not merely removed, but melted down—for prevention is better than cure, and we can be sure by this means that *should* any moth eggs lurk in any of the cells it will never come to perfection.

All bottom boards should be cleaned. In bar-frame hives it is as well to cut a channel right through the combs not far from the upper middle of the frames, that the bees may travel from end to end of the hive without descending. Hot air always ascends, and the bees will thus be kept warmer than if they had to travel right round a comb when they wished to get from one side to another.

In covering your hives be careful that you do not encourage dampness. It is damp cold that kills nine out of ten of the bees that perish during the winter. If you cover your hives with sacking or something *sui generis*, do not let it rest entirely upon the woodwork of your hive. Place something between it and the roof, that a current of air can pass without interruption in the channel thus made between sacking and roof.

Hives that stand in meadows should be cleared of surrounding weeds and tall grass, which engender dampness.

As mentioned in our article on "The Garden," now is the time for planting out bulbs for early spring flowering. Though in few cases, perhaps, any special planting is required for bees, it is just as well that apiarians who are fond of the cultivation of flowers should give the preference to those which are honey yielders.

PERSONAL.

THE BEEKEEPER was first thought of by its promoter towards the end of last year. He was then shown a circular emanating from the British Beekeepers' Association, dated 3rd December, 1877, in which he found these words:—"I am directed by the Committee to add that the desirability of publishing a periodical in the interest of the Association and of *Beekeeping* (our own italics) has been several times urged upon them, and that, after careful consideration, they are also themselves convinced of the necessity of such a publication, as a means to bind the members together, to advocate the claims of the Association upon beekeepers generally, and to the more effectual carrying out of the objects for which the Association was established."

Now the chief objects of the Society have always been—to quote from their articles of association—"The encouragement, improvement, and advancement of bee culture in Great Britain, particularly as a means of bettering the condition of cottagers and the agricultural labouring classes, as well as the advocacy of humanity to the bee." Or, as the last phrase was afterwards altered, "humanity to the industrious labourer, the honey-bee."

The circular added that:—"It has been suggested that the necessary means be raised by the subscription of forty

or fifty members to a Guarantee Fund, at £5 each, to be called for by *pro rata* instalments as capital is required, such fund being kept perfectly distinct, and being applied only to the purpose for which it was subscribed."

In answer to this appeal promises to the extent of about £85 were made, the estimated capital required being £200. The suggestion fell through, whether from want of support or from any other cause we know not. At all events, it seemed to the promoter of the present paper that a periodical such as that suggested would have been a mistake. It would not have been sufficiently independent. Too much jealousy already existing among the professional bee-masters, it seemed likely that the paper would be looked upon with suspicion by those who were not guarantors of the fund, or who had no hand in its management. This was an individual opinion, and we have had no means of ascertaining whether it is confirmed by others.

During the winter and early spring the promoter of the BEEKEEPER was on the Continent, but he employed his time in thinking the matter out. On his return he visited many of the more prominent apiarians, or met them accidentally, when he found, without mentioning that he had any intention of bringing out a paper, that the want of it was all but unanimously felt by those interested in bee-culture whom he met.

He then set to work and matured his plans, and in August he sent out a few letters to some of the leaders of the Association, and to others well known for their interest in apiculture. Personally, he was not acquainted with one of them; and this, no doubt, would account for two curious facts. In the first place, he noticed that few of the letters were answered by return. Some days had apparently been spent in inquiring, "Who is the writer of this letter?" And the other fact was this, that several of those who had *verbally* told him that a journal was very desirable, now said that it was not wanted at all. Those answers that he received by return of post were mostly enthusiastic in hailing the prospect of the BEEKEEPER with delight. One gentleman especially was most anxious to manage it entirely. It was just what he wanted.

On the 2nd of October, during the Hemel Hempstead Show, some blank copies were sent to that place, and we take this opportunity of thanking the Secretary of the Hertfordshire Beekeepers' Association, and also another gentleman whom we do not know personally, but who had offered us help, for distributing them as we requested. A day or two later we sent out nearly one hundred others, and we think it may amuse some of our readers to know what kind of advice, and some of the suggestions, we received.

The first objection we mention is a very reasonable one—"It will be tedious to wade through matter that is old to us but dressed in new verbiage." This was not the first we received, but we give it as being that which, in our opinion, was the most sensible objection made. We can only say we will do our best to keep all "old matter" distinct from new. We repeat, we do not pretend to be teachers of the experienced, but we wish them to make use of our pages for the sake of those who are as yet only versed in the rudiments of apiculture.

One letter (from a clergyman) told us that we were mad to think of starting such a paper—"You will do harm to everyone, and mostly to yourselves!"

Several others, not quite so trenchant, seemed to think we were recklessly squandering money.

On the other hand, not a few told us that "if we kept the

promises made in our 'Address to Subscribers,' we might count on a great success." To these we reply that we shall do our best to keep our promises in all integrity.

Others informed us, "We shall not subscribe until we see how the paper turns out." With these correspondents we were much pleased. We have asked no pecuniary help, nor have we received it, from any person. We publish our paper and leave the public to decide, purely on its merits, whether it shall stand or fall.

Two gentlemen (one of them we have never heard of, nor can we ascertain that his name is known to apiarians) were most desirous to invest money in the concern. These offers we declined with thanks.

From some we received the advice that a weekly paper would be much more efficacious, and would pay better than a monthly one. It was our original intention to make the BEEKEEPER a weekly publication; but the expense frightened us, and we thought we would first wait to see "how things turned out."

One gentleman advised that we should allow no advertisements from beekeepers. We do not expect to make a fortune, but we *should* like to pay expenses.

Several objections have been made to our extra prize for instructions "How to make a Hive," and suggestions have been made that we should, instead, offer prizes for hives. We may do the latter later on, *si qua fata sinant*; but, at the same time, we think, in the interest of the "cottagers and the agricultural labouring classes," our prize, as it at present stands, is best. We have no wish to interfere with or spoil the business of any hive-maker. On the contrary, we urge our readers to buy at least one hive before they attempt to manufacture them themselves; and we would further suggest that those who can afford it will nearly always find it more satisfactory to purchase than to make hives. But our supreme object is "the encouragement, improvement, and advancement of bee culture."

Another objection received was that no one well known to the apiarian world was connected with our paper.

Full many a gem of purest ray serene,
The dark unfathomed caves of ocean bear.
Full many a flower is born to bloom unseen,
And waste its sweetness on the desert air.

It does not follow because the gem has not yet fallen into the hands of the diver that it never will! Nor does it follow that because we have hitherto hidden our apiarian light under a bushel that we know nothing of the subject. We need not say we do, for our readers will soon be able to solve this question for themselves. We think the very fact of our not being one of the clique so well known should be in our favour. The infusion of a little new blood should have no other effect than to strengthen.

"Deal with the garden," and "Can you not help us in the cultivation of honey-giving plants?" are other suggestions. We were already considering the advisability of giving a page or two on this subject, and were easily induced to follow this advice. People always *are* inclined to follow advice when their desires coincide with it.

The suggestions for giving articles on poultry caused us more trouble, and we were for a long time dubious about taking this advice. After consideration we have come to the conclusion that we can do no harm by mentioning poultry. A little change may be beneficial. Spinosa found it so when, after long continued close attention to study, he amused himself by setting spiders to fight; and Cardinal Richelieu found great relaxation from the arduous cares of State in

GEO. NEIGHBOUR & SONS' CELEBRATED BEE HIVES.

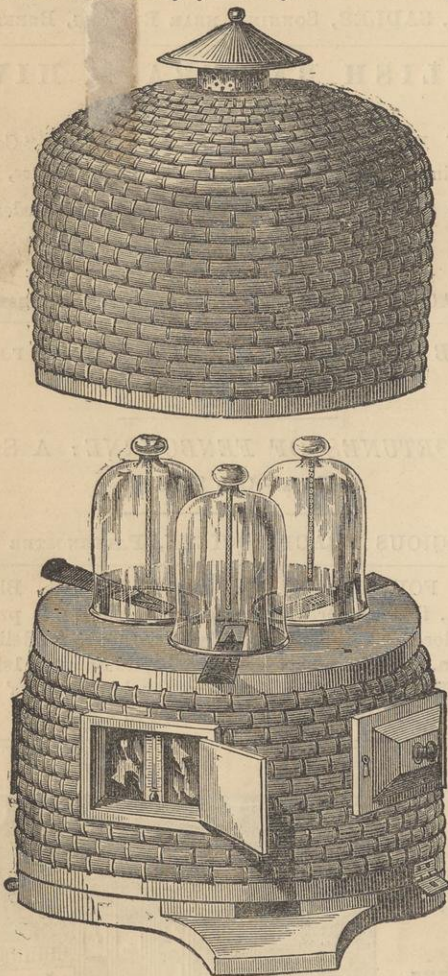
SILVER MEDALS Awarded at Philadelphia Exhibition, 1876; Paris Exhibition, 1867 & 1878.

NEIGHBOURS' IMPROVED COTTAGE HIVE,

As Originally Introduced by GEO. NEIGHBOUR and SONS, working Three Bell-Glasses, from which the honey can be removed without injury to the Bees.

PRICE £1 15s.

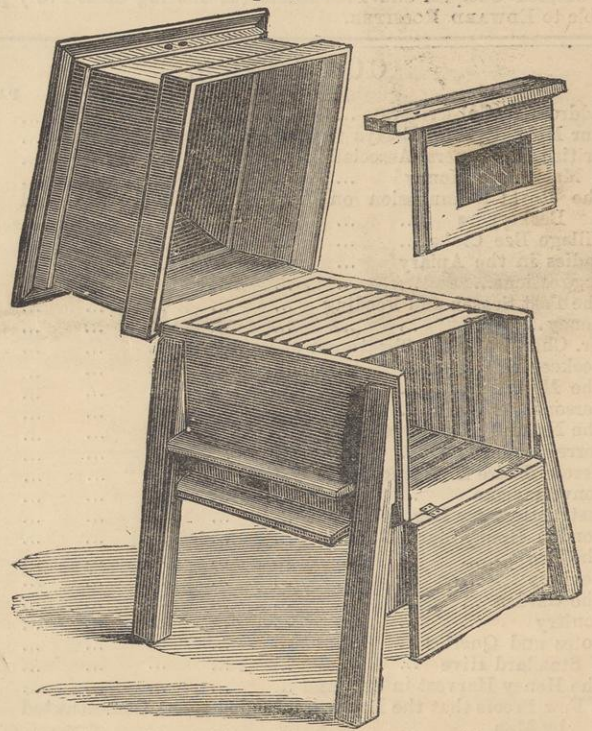
This Hive is more Easy of Management than any other.



NEIGHBOURS' PHILADELPHIA BAR FRAME HIVE

Has facilities for Removal of Combs at side opening as well as from top.

PRICE Complete, Painted, with Roof, Stand, and Super, 42s.



ITALIAN ALP-QUEENS for uniting to Black Stocks at Current Prices.

LIGURIAN and ENGLISH BEES.—Stocks and Swarms may be obtained as heretofore.

"THE APIARY." By ALFRED NEIGHBOUR. 5s., Postage 5d.

A newly-arranged CATALOGUE of other Improved Hives, with Drawings and Prices, sent on receipt of Two Stamps.

GEO. NEIGHBOUR & SONS, 127, High Holborn, W.C.; or 149, Regent St., London, W.

wants of cottagers. Five entries: First, J. Walton; second, Abbott Bros.; third, H. Fuggle.

Class 8.—For the best and most complete collection of hives and bee furniture; no two articles to be alike: First, Neighbour and Son; second, S. J. Baldwin; third, Abbott Bros.

Class 8A.—For the best exhibition of honey in supers, or sections of supers, separable, and each not more than two pounds in weight; the total weight of each entry to be not less than ten pounds. Open to all comers. Three entries: First, F. Cheshire; second, E. Gulston.

Class 9.—Same as Class 8A, but open only to residents in the county of Herts. Eight entries: First, S. Thorne; second, S. Thorne; third, Miss Gayton; fourth, G. Freeman.

Class 10.—For the best single section in the comb, weighing not more than three pounds. Open to residents in the county of Herts. Ten entries: First, S. Thorne; second, S. Thorne; third, Miss Gayton.

Class 10A.—For the best single section in the comb; open to all comers. Five entries: First, Neighbour and Sons; second, F. Cheshire.

Class 11.—For the best exhibition of pure extracted honey in glass jars: not to exceed two pounds each. Each entry to consist of not less than eight jars. Four entries: First, S. Thorne; second, J. Clapp.

Class 12.—For the best exhibition of honey in the comb, taken from a hive without destroying the bees; open to all *bonâ fide* cottagers residing in Herts. Two entries: First, S. Thorne; second, Mrs. Slough.

Class 13.—Extra; open to all England; glass supers. Four entries: First, S. Thorne; second, Mrs. Clay; third, Miss G. S. Loyd.

DRIVING COMPETITION.

1.—For the competitor who shall in the neatest, quickest, and most complete manner drive out the bees from a straw skep, and capture and exhibit the queen; for residents in the county of Herts. Ten entries: First, W. Childs, seven-and-a-half minutes; second, J. Clapp, eight minutes.

2.—For the competitor who shall in the neatest, quickest, and most complete manner drive the bees from a straw skep, capture and exhibit the queen, and transfer both combs and bees into a hive on the moveable comb principle. Five entries: First, J. Walton, ten-and-a-half minutes; second, S. J. Baldwin, seventeen minutes.

It will be seen that the visitors were far behind the residents. Of course there is a certain amount of chance in driving, and the professionals were "out of luck."

LINCOLNSHIRE BEEKEEPERS' ASSOCIATION.

The fourth annual Bee and Honey Show, under the auspices of the Lincolnshire Beekeepers' Association, took place on the 8th and 9th instant at Long Sutton, and was in connection with the Long Sutton Agricultural Society's Show. Unfortunately, we have not received the list of prize-takers in time for publication in the BEEKEEPER. There were, however, about twenty-five classes, the schedule resembling that of the Hertfordshire Beekeepers' Association, but it was better arranged. There were practical illustrations of manipulations of bees by some of our able bee-masters, which, as is generally the case at the honey and bee shows, gave much amusement to the visitors. The president of this successful association is the Bishop Suffragan of Nottingham; the hon. secretary, Mr. R. R. Godfrey, of Grantham.

CONVERSAZIONE.

WE give the following for the benefit of those who are not members of the British Beekeepers' Association. It is taken from a circular sent by the Association to its members, and is a report of a *Conversazione* held in the Albert Hall at the time of the Society's fifth annual honey and bee show in July last, the Right Rev. Bishop Tozer in the chair. Subject for discussion, "The Plants and Flowers Most Worthy of Cultivation as Honey Producers," introduced by W. Ingram, Esq., of Belvoir Castle Gardens. Mr. Ingram, after a few introductory observations, said:—

On the presumption that as an apiarian and as a large culti-

vator of a class of hardy plants not much noticed beyond botanic gardens in the present day, I should be in a position to give you some information concerning the relation of those plants to bees, and their capabilities of affording them useful food, your secretary has requested me to introduce the interesting subject of bee-flowers to this meeting.

Our botanical collectors have sent us floral gems from every country in the world, from the temperate zones of the Alps and Andes, from the lofty Himalayas, from China and Japan, from the stern asperities of the Rocky Mountains, from storied Greece, and from the rugged slopes of Scandinavian hills. Trees, and shrubs, and flowers have been gathered and transported to our woods, and fields, and gardens, and have been found to flourish, and to give us freely their gifts of fruitfulness, bloom, and beauty. Such additions to the indigenous flora of our country offer us, as apiarians, a singularly extended choice; and it will be our own fault if we do not avail ourselves of materials so rich and varied, such, indeed, as were never gathered together in any country in the world's history. In naming and recommending certain exotic flowers for general cultivation in the gardens of those persons interested in bees, and even advocating their extension beyond those limits, we must still for the present regard such aids as subsidiary. Bees will not be diverted from their natural pasturages; and the great sources of supply, in early fruit blossom, in bean and clover fields, in the woods, and in the wild flowers of our heaths and meadows, must still be our dependence as food-producing areas for our bees. *But as food is most valuable when most required*, and supplies from the sources I have indicated are not always available when most necessary, we must make use, largely and freely, of the materials which our travellers and botanists have placed within our reach. There are periods in the year when but few of our native plants appear in bloom, and we often see in very early spring that bees are tempted from their hives by a little sunshine, and many of you must have observed the enjoyment they have in visiting any chance flower they may find expanded. I think I may be assured of your concurrence when I say that it is most desirable to cultivate as many early blooming plants as possible, to meet the anxious craving of bees for their natural food; and I have prepared a list of very early hardy plants, which I will submit to you and comment on by-and-by.

Now as an argument for the cultivation of bee plants during the summer, it must be remembered that the native supply is not continuous. There are wide spaces of time between fruit blossom, and clover, and beans, and lime, and these gaps may be usefully filled up by the judicious selection of suitable plants. And there is another great argument for the home cultivation of bee flowers, which in the present season must have pressed forcibly on your notice. Bees are averse to travelling; and when threatening clouds are gathering on the horizon, flowers provided close at home enable the busy workers to continue their useful labours of gathering and storing food. I may, perhaps, venture to say that in extending the cultivation of bee flowers the necessity for the employment of artificial condiments may be to a certain extent obviated. I cannot imagine but that sugar and water must be but an imperfect substitute for the rich *pabulum* found by bees in the nectarious glands of pure and beautiful flowers.

I may here remark that the co-relationship existing between bees and flowers is very intimate, and the dependence which may seem to exist on the part of the insect is not wholly so. The action of bees in visiting expanded flowers, and thus ensuring fertilisation by effectually distributing the pollen, is not the only good they effect. Visiting successively flowers of the same species, they carry pollen from one plant to another, thus averting the necessity for self-fertilisation, and in consequence the decay and degradation of the race, and effecting the good that is recognised to accrue from the fertilisation of the flower by pollen, not derived from the same plant.

I have now to bring to your notice the various plants which I believe may be cultivated with great advantage by apiarians for spring bloom. With me, in ordinary seasons, there is no earlier or sweeter flower than that produced by the winter honeysuckle (*Lonicera fragrantissima*), and every beekeeper should be in possession of this excellent shrub, which can be grown against either an east, or west, or south wall. I may associate with it *Jasminum nudiflorum*, which is equally early, but less fragrant. As a plant which produces very early flowers, and may be grown in any wild and unconsidered spot, *Tussilago fragrans* may be mentioned. Then a very beautiful and precocious crocus called *C. Imperialis*. Closely following this is a bright blue anemone, from the Appennines,

the exercise of jumping with his satellites (who were generally courtiers enough to allow the Cardinal to beat them) over chairs and forms!

One letter really astonished us: "If you carry out your promise, and make the demand for honey to be so readily supplied as you say it will be, you will ruin all those who sell honey now. It is a most stupid thing to go and tell the public that people don't know what to do with their honey; they won't give a penny for it after your paper comes out, when they know they can get it for the asking. You may pretend you're going to do a lot for poor people, but it's all cant, and you won't do it, and you'll spoil the business. But I, for one, don't think you'll do it." Except to thank this correspondent for having so high an opinion of the future "wide circulation" of our paper, and the great influence that he imagines it will have with the public, and to mention that we have somewhat altered the orthography of this letter, we cannot think of any other remark to make.

These are a few specimens of the letters we have received. On the whole we have been treated very courteously, and have nothing to complain of. This is the first and last time we shall be personal, and we trust our readers will forgive us if they are not quite of opinion that we were judicious in making these remarks. Everyone must see that, with the best intentions in the world, and with the heartiest desire to please (and therefore *succeed*) it would be utterly impossible for us to follow *all* the advice we have received. We might aptly quote a very old fable, but as it is known to everybody we will not waste space upon it.

THE NATURAL HISTORY OF CENTRAL AMERICA.

UNDER the title of "Biologia Centrali-Americana," Messrs. F. D. Godman and Osbert Salvin propose to publish a voluminous work upon the natural history of Central America, including the whole of Mexico, from the valleys of the Rio Grande and Gila on the north, and the Central-American States of Guatemala, Honduras, San Salvador, Nicaragua, Costa Rica, and Panama as far south as the Isthmus of Darien.

Messrs. Godman and Salvin have been collecting materials for the work for upwards of twenty years. They have spent several years in the country, and received collections from naturalists specially employed in visiting previously unexplored districts.

The work will be issued in two distinct parts, zoological and botanical, either of which may be subscribed for separately. It will be illustrated by coloured lithographs. It is believed that the zoological part will be included in twelve quarto volumes of 500 pages each.

The editors are to be congratulated on their good fortune in obtaining the co-operation of so many eminent authorities in the zoological part of their work. The different subjects have been undertaken as follows:—

Mr. E. R. Alston will describe the mammals; the birds will be described by the editors themselves; Dr. A. Günther undertakes the reptiles and fishes; Mollusca (both land and freshwater) will be given by Dr. E. von Martens; and the freshwater Crustacea by Professor T. H. Huxley. The Rev. O. Cambridge will describe the spiders. The Coleoptera, being excessively numerous, will require the services of Messrs. H. W. Bates, the Rev. H. S. Gorham, Martin Jacoby, E. W. Janson, Dr. D. Sharp, and C. O. Waterhouse. The Lepidoptera will be undertaken by Messrs. Godman, Salvin, and Herbert Druce. Mr. R. McLachlan takes the Neuroptera; Mr. J. Wood-Mason the Orthoptera; and Mr. W. L. Distant the Rhynchota. No arrangement has yet been made for the Hymenoptera or Diptera. The botanical portion is entirely in the hands of Mr. W. B. Hemsley. An introductory volume will be given, describing and illustrating the remarkable physical features of the country.

ALL who suffer from colds should never be without Dr. Dunbar's Alkanan, or Anti-Catarrh Smelling-bottle.—Advt.

CORRESPONDENCE.

NOTICE TO CORRESPONDENTS.

We make it a rule, and one that we shall adhere to strictly, that all letters for insertion in THE BEEKEEPER must, when published, bear the name and address of the writer. Ours is an independent journal, open to all who wish to call notice to anything new or interesting to the bee-keeping world, and we believe we shall remove a source of constant suspicion and complaint if we firmly follow this regulation. These remarks do not apply to the Notes and Queries department.

While we shall print as much correspondence as possible we do not bind ourselves to publish every letter we receive, and shall feel at liberty to reject those that seem to us devoid of general interest and those which, in our opinion, are likely to lead to quarrelling instead of fair discussion.

We respectfully beg all our readers to have perpetually in view a laudable desire to extend the practice of bee culture in this country, and having this aim before them to send us reports of anything they meet with in their experience that seems to them to have been unnoticed before.

TO THE EDITOR OF THE BEEKEEPER.

SIR,—Having made trial of Messrs. Christy and Son's hydro-incubator, and having found it very successful, I should be much obliged to you if you would open your columns to the public in order that we may hear different reports of the results obtained from this valuable apparatus. Having purchased mine late in the summer, I was unable to set it working before the 4th or 5th of August. My housekeeper took the management of it in the kitchen, and was thus able to keep it in operation with very little trouble. About 75 per cent. of chickens were hatched out alive, and, with the exception of a few casualties since, partly owing to the inclemency of the weather, &c., they are all doing well. Many eggs proved unfertile; in others the chickens were found fully developed, but dead. This latter catastrophe may possibly have been due to an insufficient dampening of the earth-tray beneath the egg-drawer. The eggs were turned twice a-day, and once moved in the drawer, two to two and a-half gallons of boiling water being added to the cistern every twelve hours.

I consider the artificial mother most useful, if not overcrowded. Every person breeding chickens or game should possess one or two of these, whether they use hens or incubators for hatching purposes.

Tangier Park, Basingstoke, Oct. 1.

SLINGSBY BETHELL.

HEREFORDSHIRE BEEKEEPERS' ASSOCIATION.

THE first county show of the Hertfordshire Beekeepers' Association took place at Bury Grounds, Hemel Hempstead, on the 1st and 2nd inst. Weather was not propitious, the first day beginning with a heavy downfall of rain, and although it cleared up at noon the ground was in a very muddy, sloppy state, something à la mode de Kilburn. There were seventy-six entries to thirteen classes. We append list of prizes:—

Class 1.—For the best stock of Ligurian or any other foreign bees. Four entries: First, Abbott Bros.; second and third, Neighbour and Son.

Class 2.—For the best stock of English bees. Two entries: First, S. J. Baldwin; second, Neighbour and Son.

Class 3.—For the best and most complete hive on the moveable comb principle, to include covering, stand, floor-board, and facilities for storing surplus honey. Twelve entries: First, J. M. Hooker; second, Abbott Bros.; third, J. Clapp.

Class 4.—For the best complete hive on the moveable comb principle for cottagers' use, to include cover, floor-board, and facilities for storing surplus honey. Price not to exceed 10s. Eight entries: First, H. Fuggle, price 10s.; second, S. J. Baldwin, price 10s.; third, S. Franklin, price 10s.

Class 5.—For the best straw hive on the moveable comb principle. Two entries: First, Neighbour and Son; second, Abbott Bros.

Class 6.—For the best and neatest supers for producing honey in the comb, in the most attractive and saleable form. Four entries: First, R. Steele; second, Neighbour and Son; third, Abbott Bros.

Class 7.—For the best honey extractor, calculated to meet the

trust, all the information needed. It is absolutely necessary, however, that the novice in beekeeping, before he can properly understand any paper on bee-management, should at least have some acquaintance with the modern hive. All those that are used now-a-days, though they may differ from one another in minor details, are alike founded upon the hive invented by the Rev. L. L. Langstroth, an American clergyman.

The body of the hive is a box without top or bottom. Different apiarians use different sizes; but into this question we need not now enter. This box rests upon a board called the bottom board. Some beekeepers prefer to have this bottom board fastened to the body of the hive; but they are in the minority. Oblong boxes are more in use than square, and the bees' entrance to the hive should be at one of the smaller sides. The opening may either be made in this side or cut from the bottom board. It is generally considered advisable that hives should not stand higher than four or five inches from the ground. This, again, is a matter of dispute among modern apiarians. A movable cover fits on the top of the body of the hive. This should be made like the slanting roof of a house, so that in wet weather the rain cannot settle on it, but will flow off as fast as it falls. Plenty of room for projection should be allowed, so that when much exposed to the sun the sides of the hive will at all times be somewhat shaded. So much at present for the outside of the hive. Fitting into the interior are several frames. These are placed so that any one of them can, when it is desired, be removed without disturbing the others. It is into these frames that the bees build their comb, and thus we have that great desideratum of beekeepers in all ages, a complete supervision over the hive, and we are enabled by means of the extractor or slinger to take the honey from the comb and to replace the latter for the bees to fill again. There are many other advantages to be derived from this system, of which we need not speak with any minuteness now. We can remove infected brood, we can destroy cells containing drones, we can take healthy brood from a strong or overpopulated hive and place it in one where the bees are weak in strength and number. The tops of these frames are longer than the sides and bottom, so that the projecting ends rest upon a ledge cut out of the inside of the lengths of the hive. The frames are thus suspended, leaving space for the bees to crawl about on the bottom board. Over the tops of the frames is placed a quilt, which prevents the bees from escaping that way. When the body of the hive is full of comb and honey, another box of the same length and width is placed over it and between it and the roof. This is called the super, or "sectional super." Dividing these boxes from one another is a sheet of perforated zinc, bored with holes of such a size that while a worker bee can get through, neither a queen nor a drone (both of which are larger) can obtain entrance to the super. This has the double effect of preventing the queens from laying eggs there, and thus spoiling the purity of the honey, while it also keeps the lazy drones from devouring the fruits of the labour of the worker. If you want "run-honey," *i.e.*, honey without the comb, the upper box contains frames like the lower, while if you desire honey in the comb the upper box, or sectional super, is smaller and contains smaller frames, called sections, and made in a different way to those in the body of the hive. Here we have a very rough sketch of a movable-frame hive.

To commence beekeeping one must, of course, first have a hive; the next necessity is a swarm to fill the hive. The best time to purchase a swarm is at the end of April or beginning of May. The bees are then young and the queen fertile. You can, however, buy hives ready filled with bees (called a colony), and for some reasons this is preferable to purchasing swarms. If you *do* buy a colony, take care that it comes from some place at least two miles from your own, otherwise you run the risk of the bees returning to the spot whence they came. If you buy it from someone living near, have the hive sent away to some distance for a few days, and *then* bring them to the place where you intend to locate them. If you buy a swarm the next thing you have to know is how to hive it; it will most likely reach you in a straw skep. How is it to be moved from this into another hive?

The plan mostly adopted is the following: Procure a sheet and spread it upon the ground as smoothly as possible, taking care that there are no folds or large creases. It is best to fasten it down at the four corners. Now take the body of the new hive which is to be the home of your bees, place it upon the sheet with the side which contains the entrance propped up to a height of not more than one inch. You can do this by resting the hive upon a stick which you have previously laid upon the sheet, so that, while the end of the hive touches the sheet, the front will be raised. But do

not put the stick in such a position that it will prevent the bees from crawling into the hive at the front. The top of your hive must be covered so that the bees cannot get out that way through the spaces between the tops of the frames.

Meanwhile you must have removed the bottom of the straw hive, and have left it alone for a little time for the bees to cluster towards the top. Now take the straw hive to the sheet, hit it sharply on the top, so as to shake the bees out of it, and let them fall gently in front of the new hive. Be careful not to put the straw hive down anywhere near. When the bees have once rested upon the sheet they will show little or no disposition to fly away. They are laden with honey taken from the hive from whence they issued, and are only anxious to find a new home where they can use this honey in constructing a comb. The chances are, therefore, that they will soon gladly take advantage of the new home you have provided for them. Should they not show a disposition to do so you can either gently brush a few in, or, according to Langstroth's instructions, "gently scoop up a few of them with a large spoon and shake them close to the entrance of the new hive. As they go in with fanning wings, they will raise a peculiar note, which communicates to their companions the joyful news that they have found a home; and in a short time the whole swarm will enter without injury to a single bee."

Give the bees time to cluster and settle inside the frames (you can do no harm in giving them a full hour, or even more), and then gently move the new hive to the place where it is to remain. In this operation it is well to bear in mind the following things:—

1. With the exception of the sharp rap on the straw hive let all your motions be gentle.
2. Take care that your sheet is placed where it is shady, and that your new hive is cool. An hour or so before sunset is the best time for the operation.
3. Should the weather on the next day or two be unfavourable the bees should be fed. There is a short paper on "Feeding" in the present number of the BEEKEEPER.

In one or two of the frames a piece of "comb-foundation" should have been placed. "Comb-foundation" is a very thin sheet of wax pressed into the shape of the foundation of the cells, and it is found most useful in the apiary—first, because it saves the bees labour; and, secondly, because it does much to ensure their building their combs straight. This "comb-foundation" is fixed inside the frames at the top, melted wax being used wherewith to fasten it to the wood. It is not advisable to place it in all the frames, but only in one out of every three, or in every alternate one. This "comb-foundation" may be either quadrilateral or triangular. In the former the bees sometimes begin to build their combs in two or three places at the same time, thus running the risk of the whole comb being somewhat crooked when finished, while in the latter they begin, as a rule, at one point only.

The bees soon set to work on this foundation. They begin by chipping and cutting it until it is thin enough for their purpose, and then commence to build their combs upon it.

(To be continued in our next.)

LONDON HONEY MARKET.

The following are the quotations for the past month:—

		1879.	1878.
Sept. 20 ...	Cuba ... per cwt.	25s. to 40s.	30s. to 50s.
" "	" Jamaica "	32s. to 40s.	35s. to 45s.
" 27 ...	Cuba ... "	25s. to 40s.	30s. to 50s.
" "	" Jamaica "	32s. to 40s.	35s. to 45s.
Oct. 4 ...	Cuba ... "	25s. to 38s.	38s. to 50s.
" "	" Jamaica "	27s. to 40s.	35s. to 45s.
Oct. 11 ...	Cuba ... "	25s. to 38s.	38s. to 50s.
" "	" Jamaica "	27s. to 40s.	35s. to 45s.

The following are the sales:—Sept. 16, 140 cases, Californian, went slowly at 40s. to 40s. 3d.; Sept. 23, 100 brls., Chilian, 34s.; Sept. 30, 33 pkgs., Jamaica, were sold, realising, for dark to fair, 27s. to 32s., good to fine 36s. to 39s.; Oct. 27, 200 brls. of Chilian, part only sold at 49s.

LAMPLOUGH'S CONCENTRATED LIME JUICE SYRUP, a perfect luxury, with the addition of PYRETHIC SALINE, a delicious cooling summer beverage. In bottles 2s. and 4s. 6d. each. 113, Holborn, London, E.C.—Advt.

A DISCOVERY has been lately made on the banks of Lake Ladoga of a human skeleton about 20 feet below the surface, evidently belonging to the stone period.

called *Blenda*, succeeded by a paler blue named *Appennina*; with this also appears *Iris reticulata*, a perfect gem amongst plants. The Siberian violets and their floriculturally enlarged allies should find a place in every garden, as they are rare; in early spring they are without flowers. Then we arrive at one of the best and most easily cultivated spring flowers, *Arabis alba*, of which there are two varieties, one preceding the other by some weeks; this should be largely grown; and associated with this is the pretty little lilac *Aubrietia* from Greece, which doubtless fed the classic bees of that land, so rich in recollections interesting the human race. So much do I appreciate this plant that I have lately set out some 5,000 seedlings.

Another plant, not so generally grown, but valuable for its habit of early blooming, is *Cardamine rotundifolia*. *Erica carnea* and herbacea, two spring blooming heaths, are much visited by bees. The primrose and early crowslip (*Macrocalyx*) should be grown in every beekeeper's garden; and also the early border hyacinths, particularly the single forms, which, thanks to our Dutch neighbours, are cheap and easily attainable. I am not prepared to say which amongst the many forms of croci is the best for bees; but the common yellow crocus is much visited by bees. *Scilla bifolia* and *Siberica* are early and attractive to bees; and *Fumaria solida purpurea*, once introduced into your gardens, will not soon be lost, and will afford a large surface of bloom. Several early shrubs should on no account be omitted. *Rhododendron dauricum atrovirens*, and *Andromeda floribunda*, and *Chimonanthus fragrans*, are very early and valuable.

I have mentioned the more prominent spring flowers:—*Lonicera fragrantissima*, *Jasminum nudiflorum*, *Croci*, *Anemones*, *Violets*, *Arabis*, *Aubrietia*, *Cardamine*, *Erica*, *Primrose*, *Hyacinth*, *Scilla*, *Fumaria*, *Rhododendron*, *Andromeda*, and *Chimonanthus*; and the list might be easily extended; but gifts of food from this array of very early plants before the blossoming of native plants will not be an inappreciative advantage to bees.

I can only venture to particularise a small number of the numerous hardy summer blooming plants, specimens of which are in the collection I have exhibited. The few I can with confidence name I am persuaded will be greatly valued by beekeepers when their merits are known. First, the little hardy Californian annual or biennial, *Limnethis Douglasi*, a plant that withstands our most severe seasons, that blooms freely, reappears constantly from seed, and is preferred by bees to almost any other flower in its season—May, June, July. The next is *Verbascum phoenicum*, a plant of less duration, but in great favour with bees in June and July. *Epilobium angustifolium album* is attractive to bees, and *Thymus montanus albus* and *Veronica rupestris* are equally so in June and July. These plants should be in the garden of every beekeeper.

I feel that I have only lightly touched upon a very interesting subject, and my paper must be regarded as a slight and imperfect notice of it.

The Rev. J. L. Sisson having thanked Mr. Ingram for his most able and instructive paper, mentioned the *Snowy Mespilus* or *Medlar*, sometimes called *Mespilus Canadensis*, which he had met with in Gloucestershire, as an excellent plant, which he recommended all beekeepers to cultivate, as flowering early when no other shrubs are available; he had found it mentioned in the works of Label and Miller.

The Rev. E. Bartrum—It is a mistake, as I have found by experience, to cultivate any great number of flowers for the sake of the bees. I should recommend the following:—*Wall-flower* for spring. *Borage*, particularly pretty and useful in moist as well as dry weather; it continues in flower a long time, and readily propagates itself. *Phacelia*, a free-growing plant, of which the bees are very fond, and which, I believe, affords honey of good quality; it continues in bloom a long time. *Mignonette*, rather difficult to grow, but most useful. *Melilot Clover*, often recommended, is, I believe, a mistake. It is a biennial, and rarely blooms the first year. It occupies a great space, and is a very rank grower, and at present is not with me fully out in bloom.

Mr. T. W. Cowan asked Mr. Ingram which of the plants he had mentioned afforded honey and which pollen to the bees. The box and the crocus both afforded pollen, but not honey. The *Phacelia* was also covered by bees. He wished to know whether the *Jasminum nudiflorum* was not poisonous. *Kalmia latifolia* was also said to be poisonous. It was now in full bloom, but if poisonous it had better not be cultivated near an apiary. It was a plant requiring a peaty soil. *Buddea globosa* was also a favourite plant with bees. The *Cherlock*, *Myosotis*, *Ledum angustifolium*, which required a peaty soil, and the *Epilobium hirsutum*, were all much

visited by bees, and yielded an abundance of honey. For late feeding the *Golden Rod* (*Solidago*) is indispensable.

The Hon. and Rev. C. Feilding asked whether furze or gorse produced honey, and received an answer in the affirmative from Mr. Ingram.

Mr. F. R. Jackson (Slindon) said that the gorse in his neighbourhood was much frequented by bees, but thought that it produced pollen rather than honey. *Laurustinus* was an abundant producer of pollen. He confirmed Mr. Cowan's statement as to the partiality of bees for *Cherlock*.

Mr. F. Lyon observed that bees frequented the *Blue Veronica*, a remark confirmed by Mr. Ingram.

Mr. T. W. Cowan wished to add to his former list of flowers liked by bees the *Catnip* (*Scrophularia nodosa*) and the *Prickly Comfrey* (*Symphitum aspernum*). With regard to the latter plant, he had been unable to ascertain whether the bees drained the honey from the plant with their tongues, or whether they pierced it at the lower end. He not only advocated the growth of plants for producing honey, but also those which produced propolis, and mentioned the poplar and chestnut trees as yielding the latter in large quantities.

Mr. Ingram said that he knew the bean, a plant with a long tube, to be perforated by bees.

Mr. Jackson spoke of the lime-tree as affording abundance of honey.

Mr. Carr also mentioned the *Butterburr* (*Catoniasta microphylla*) as being good for bees.

Bishop Tozer thanked Mr. Ingram, not only for the paper, to which all had listened with so much interest, but also for his former kindness in sending a beautiful collection of spring flowers to the last *Conversazione*. He thought it a good sign for the British Beekeepers' Association when such men as Professor Redwood and Mr. W. Ingram take an interest and a part in its proceedings.

After a touching tribute to the memory of the late Rev. Charles Cotton, author of "*My Bee Book*," and other works on apiculture, the Bishop brought the *Conversazione* to a conclusion, and the meeting separated with a well-earned vote of thanks to the chairman.

INSTRUCTIONS FOR BEGINNERS.

No. I.—By E. D. BLACKWOOD.

EVERYONE commencing beekeeping should be well acquainted with the following axioms of Mr. Langstroth, the prince of practical apiarians.

There are a few *first principles* in beekeeping which ought to be as familiar to the apiarist as the letters of the alphabet.

1st. Bees gorged with honey never volunteer an attack.

2nd. Bees may always be made peaceable by inducing them to accept of liquid sweets.

3rd. Bees, when frightened by smoke or by drumming on their hives, fill themselves with honey and lose all disposition to sting, unless they are hurt.

4th. Bees dislike any *quick* movements about their hives, especially any motion which *jars* their combs.

5th. In districts where forage is abundant only for a short period the largest yield of honey will be secured by a *very* moderate increase of stocks.

6th. A moderate increase of colonies in any one season will, in the long run, prove to be the easiest, safest, and cheapest mode of managing bees.

7th. Queenless colonies, unless supplied with a queen, will inevitably dwindle away, or be destroyed by the bee-moth, or by robber bees.

8th. The formation of new colonies should ordinarily be confined to the season when bees are *accumulating* honey; and if this or any other operation must be performed when forage is scarce the greatest precautions should be used to prevent robbing.

The essence of all profitable beekeeping is contained in Oettl's Golden Rule: *Keep your stocks strong*. If you cannot succeed in doing this, the more money you invest in bees, the heavier will be your losses; while, if your stocks are strong, you will show that you are a *bee-master*, as well as a beekeeper, and may safely calculate on generous returns from your industrious subjects.

Keep all colonies strong.

We need not enter into any minute details of the construction of the hive on the movable comb principle. Our Ten Guinea Prize Essay, which will be published in a very cheap form, will give, we

Like hiveless bees they wander here and there
And hang on them who (earst) did dread their ire.

Milton ("Paradise Lost.")

As bees

In Springtime, when the sun with Taurus rides,
Pour forth their populous youth about the hives
In clusters.

From this we see that Milton, city born and bred as he was,
diu know that bees generally swarmed during the hours nearest
noon.

Dryden adopts the bees thus as a simile:

From the Moorish camp

There has been heard a distant humming noise
Like bees disturbed, and arming in their hives.

Cogan, in his essays "On the Passions," tells us that the
indolent man "is a drone in the hive which consumes the
honey of the laborious, and he retains all who are unfortu-
nately dependent upon him in a state of poverty and want,
from which his exertions might have extricated them."

Piers Ploughman, in his "Vision," saith—"The man yat
muce honeye eet, is mawe hit englyemeth."

Shakespeare teems with similes derived from the honey bee,
most of which are too well known to be quoted:

So bees with smoke and doves with noisome stench
Are from their hives and houses driven away.
The commons, like an angry swarm of bees
That want their leader, scatter up and down.
Luxurious kings are to their people lost;
They hive, like drones, upon the public cost.
Drones hive not with me,
Therefore I part with him.
So work the honey bees, &c.

But this is quoted in nearly every work on bees, and we
will not finish it. Of the use of the hive made by other poets
we may mention—

They give us food that may with nectar vie,
And wax, that does the absent sun supply.
—*Roscommon.*

How honey-dews embalm the fragrant morn,
And the fair oak with luscious sweets adorn.
—*Garth.*

We fear, however, that we have already made too great a
digression, and will, therefore, proceed at once to the natural
history of the honey bee.

The distribution of the bee into three different kinds, one
might almost say *genera*, causes the natural history of the
apis mellifica to assume more than usual interest with the
most devoted of entomologists. In every hive we find three
classes of the honey bee: the Queen, the Worker, the Drone.
In the last named the structure of the insect is inferior to
that of the worker, while the worker bee is farther removed
from perfection than the queen. For many centuries the
worker was considered a neuter, but our present advanced
knowledge of apiology upsets this hypothesis, and tells us,
beyond doubt, that the worker is a female imperfectly endowed.
She has all the properties of a female with the exception of the
power of laying eggs, except in rare cases, of which we shall
speak hereafter. The queen is a perfectly developed female,
and the drone is a male.

In every healthy colony of bees we have one queen. She is
the mother of the colony, and her duty is to populate the
hive.

We have a number (variously estimated at from 2,000 to
10,000) of workers, on whom devolves all the manual labour
of the hive, such as constructing the comb, collecting honey,
pollen (or bee-bread), and propolis (a kind of glue gathered
by them for several purposes, of which we shall speak here-
after), feeding the young, and protecting the camp from the
invasion of enemies.

And we find in the same colony a number of drones, which,
being males, are necessary to the economy of the hive, and
yet do no work.

To speak of the queen first, she is the largest of the bees,
her form being longer, more tapering, and more graceful than

those of either the drone or the worker-bee. She seldom leaves
the hive after what apiarists call her "marriage trip." Early
in her life-time she takes a flight into the air, to meet with a
drone, and, if not successful on her first trip, she repeats it
until she is. When that is accomplished, she generally likes
to stay at home, and but rarely moves out. Her wings are
shorter than those of the drones and the workers, and her
power of flight much less than theirs. From the
time of her marriage all her energies are engaged
in laying eggs, of which she deposits two or three thousand in
the cells every day. As long as there is an empty cell the
queen will continue to lay eggs, and the skilled apiarian uses
his endeavours to confine her attentions to that comb only
which he wishes to be devoted to the rearing of brood. As
there are three kinds of bee in a hive there are also three
kinds of cell. The smallest, and in a healthy hive the most
numerous, are those in which the queen deposits eggs from
which worker-bees are hatched. One-fifth larger than these are
the cells from which drones emanate. These are hexagonal,*
the former having a diameter of one-fifth of an inch and a
depth of half-an-inch, the drone cells being a little deeper.
When the cells are needed for storing honey they are often
elongated, and are sometimes made as much as an inch deep.
The queen-cell is entirely different to these. The former are
made of pure wax, the queen-cell of wax and pollen mixed.
Other cells are built horizontally, while the queen's is either
diagonally or vertically placed at the edge of, or in some open-
ing in, the combs. In form and size it differs also, being pear-
shaped and much larger. The bees do not build these cells
without consulting the necessities of the hive, but according
to the wants of the colony. Mr. Cook says:—"The character
of the cells, as to size, that is whether they are drone or
worker, seems to be determined by the relative abundance of
bees and honey. If the bees are abundant and honey needed,
or if there is no queen to lay eggs, drone-comb is invariably
built, while if there are few bees, and of course little honey
needed, then worker-comb is invariably formed."

One of the many yet unsolved questions in bee science is
this: "What reason can be assigned for eggs laid and hatched
in drone-cells bringing forth drones, and eggs laid and hatched
in worker-cells bringing forth worker-bees?"

Are all eggs alike, and do the shape and size of the cell
determine the sex of the newly-hatched insect? Or are they
different, and has the queen some instinct to guide her, and
to tell her when a drone and a worker egg is required?"

To understand this question we learn a little more about
the wonders of the queen. Now, it is a marvellous, yet an
undoubted fact that a virgin queen can lay eggs. Yet all these
eggs, when hatched, invariably bring forth drones. After her
wedding trip, however, she can lay drone, worker, and queen
eggs. Her generative organs consist of two ovaries, or sacks,
containing eggs. These eggs, during the process of being
laid, pass through a tubular passage called the oviduct. Con-
nected with this tube or oviduct is a smaller sack called the
spermatheca. This smaller sack contains the male fluid, which
alone can fertilise the eggs. As we have said, the drone is a
less perfectly-developed insect than the worker, and it seems
very probable that the reason why the virgin queen can lay
only drone eggs is that she is not in a position to use the sper-
matheca—a probability made all the more likely by the
researches of Professor Siebold. He perceived that old queens
often laid only drone eggs, and he found by anatomy the cause
to be that the supply of the spermatheca was exhausted. This
discovery has since been several times confirmed. Then comes
the question—"Has the queen, when the spermatheca has

* The late Professor Wyman proved that an exact hexagonal cell does
not exist. He showed that the size varies; so that in a distance of ten
worker cells there may be a variation of one diameter. The sides, as also
the angles, are not constant. The rhombic faces forming the bases of the
cells also vary. There are also what are called distorted cells. Any one
who attempts to join a line of hexagons of one size to a row of hexagons
one-fifth larger will find that he cannot do this. To get over the difficulty,
the bees gradually alter the shapes of the cells, widening out a side here,
drawing in one there, until in the end the two sizes of cell fit together
without waste of space.

THE BEE.

No. I.

Those learned in entomology tell us that there are in England 267 species of the bee. Of these, the honey bee, or *apis mellifica*, is the most important not only in point of number, but also of interest and usefulness. It has been said that "no nation upon earth has had so many historians as this remarkable class of insects; their preservation and increase have been objects of assiduous care to the agriculturist; and their reputed perfection of policy and government have long been the theme of admiration, and have supplied copious materials for argument and allusion to the poet and the moralist in every age. It is a subject that has been celebrated by the muse of Virgil and illustrated by the philosophic genius of Aristotle. Cicero and Pliny record that Aristomachus devoted sixty years to the study of these insects, and Philiscus is said to have retired into a remote wood that he might pursue his observations on them without interruption. A very great number of authors have written express treatises on bees, periodical works have been published relating exclusively to their management and economy, and learned societies have been established for the sole purpose of conducting researches on this subject."

"In so complicated a branch of natural history, correct observation and induction require laborious and long-continued efforts. But, on the subject of bees, the enquirer after truth had, besides, many obstacles to encounter from the very general diffusion of errors, which had been transmitted, without due examination, from one author to another. The history of the opinions of successive writers sufficiently proves how gradual and slow has been the growth of an accurate knowledge of these insects, what is now known being the result of the persevering labours of ages. The accumulation of curious and interesting facts, indeed, which has accrued from the researches of Swammerdam, Maraldi, Réaumur, Schirach, Huber, Dzierzon, and Von Siebold, constitutes almost a new science."—*Encyclopædia Britannica*.

Mr. Alfred Neighbour, in the introductory chapter to "The Apiary" (Kent and Co., Third Edition, 1878), gives a list of authors who have written on the subject of the bee, which, though by no means complete, will give the reader some idea of the interest which has been shown for many centuries in the study of apiculture. Mr. Neighbour says: "Besides the great naturalists Linnæus and Cuvier, we therefore select the following:—

"Sixteenth Century.—Hill, Nikol Jacob. 'De Proprietatibus Apum' (anon), published about 1510.

"Seventeenth Century.—Butler, Purchas, Gødart, Swammerdam, Sir C. Wren, Hartlib, Gedde, Rusden. Ray (with Willughby and Dr. M. Lister), Dr. Martin John (of Germany).

"Eighteenth Century.—Maraldi, Mme. Nienau, Dr. Warder, Dr. Derham, Réaumur, Thorley, Lyonnet, Vanière (poet, of Holland), Dobbs, Rev. Stephen White, Schirach, Janscha, Bonner, Debray, Thos. and Daniel Wildman, Gilbert White, Mme. Vicat, Pösl, Abbé Della Rocca, Hubbard, Keys, Bonnet, Riem, Dr. John Hunter.

"Nineteenth Century.—François Huber (with his son Pierre, and Burnens), Latreille, Mlle. Jurine, Spitzner, J. A. Knight, Rev. Dr. Dunbar, Huish, Dr. Evans (poet), Feburier, Kirby and Spence, Humphrey, Baron von Ehrenfels, Newport, Dr. Bevan, Gundelach, Lord Brougham, Pastor Oetli, Capt. Von Balenstein, Nutt, Payne, Taylor, Golding, Maj. Munn, Woodbury, Quinby (of America), Wagner (ditto)."

Mr. Neighbour says further: "Of contemporary writers in our own language, we may, in addition to Langstroth, refer to Rev. W. C. Cotton, Samuelson (with Dr. Hicks), Hunter, Cheshire, and Pettigrew; while to the German names already given may be added those of Professors Leuckart and Von Siebold, Drs. Dönhoff and Küchenmeister, Pastors Kleine and Schönfeld, Vogel, Dathe, Rothe, Count Von Stosch, and Schmid, the editor of the *Bienenzeitung*. It is worth noting how large is the number of apiarians of different lands to whom the title of 'reverend' is prefixed.

"But while conceding to Germany an unquestioned first position in the apicultural department, we do not admit the

accuracy of Von Berlepsch's assertion that 'in all other countries beekeeping is almost throughout a mere plaything and amusement.' If the Baron would honour our isle with a visit we could show him, from one end of it to the other, a goodly number of very different cases; and though we have much to learn, and have not long gone systematically to work to learn it, there are not wanting clear and increasing signs that the right course is entered upon, and must in time secure corresponding results."

We may remark, *par parenthèse*, that Mr. Neighbour owns the most complete collection of bee-literature in the world.

Had the learned author of "The Curiosities of Literature" and "The Amenities of Authors" turned his thoughts to bee-literature he might have written a most amusing and instructive work upon "The Errors of Apiculturists." For some of these errors are as ludicrous as they are wild. The reader of such a work would derive as much enjoyment from the perusal of it as the precocious Harriet Martineau, aged nine, is said to have promised herself when she was informed of the birth of an infant brother: "Now I shall be able to watch the development of the human mind!"

The theory of the neuter gender of workers was held to be truth through many hundreds of years. Bacon found, or rather had read, that there was "in ancient times a kind of honey which, either in its own nature, or by art, would grow as hard as sugar, and was not so luscious as ours."

Huber discovered two classes of worker bees. Addison remarked that "Bees have each of them a hole in their hives, their honey is their own, and each bee minds her own concerns!" A remark that showed even more want of thought than absence of knowledge. If every bee had its own cell, was the system of the ballot known to them? Or how else could they have arranged which bee in the colony should first commence to build? It would, indeed, have been a poor economy, and an unwise dispensation of Providence, were all the colony to be obliged to wait while one or two were constructing the combs which were to be their own particular property. It would also have been a very disappointing business to the bee, which had determined to store honey for its own use in the winter, to find that, through the kind attention of the queen, its duty would be to take care of some embryo drone!

Were we to quote all the mistakes that have been made by those professing to know something of the nature of bees, we should require the whole pages of the BEEKEEPER for the next twelve months, and should also want our matter printed in the smallest type possible.

Should we desire to give the names of those poets who have borrowed similes or metaphors from the economy of the hive, we should have to give the names of almost every poet that ever breathed. Of those who have written in our own language alone, "their name is legion." To begin with Chaucer's (died 1,400) "Second Nunne's Tale."

Lo, like a besy bee withouten gile
Thee serveth ay thin owen thral Cecile."

And again,

Alday as thicke as beene fien from an hive.

Then Phaed (translation of the Cænid).

And lyke as beis among the flowers, whan fresh the sommer falles
In shyne of son applie their work, when grown is up their yong;
Or when their hives they gin to stop, and honey sweet is sprong,
That all their canes and cellers close with dulcet liquor filles.

Och so vedera, as the Swedes say.

Douglas (died 1,522) gives the same passage thus:

Like to the beis in the field flurist new,
Gaddering thare work of many divers hew,
In soft somer the bright son hait schyning,
Quhen of thare kynd thame list swarm's out bying,

and so on, as the English say. Cotton (Quatrains) says:

The bees are hiv'd, and hum their charm,
Whilst every house does seem a swarm."

Gascoigne ("Fruit of Reconciliation.")

But when bare beggrie bids them to beware,
And late repentance rules them to retire,

REVIEWS.

A Manual of Beekeeping. By JOHN HUNTER. Third Edition. (London: David Bogue, 3, St. Martin's-place, Trafalgar-square. 1879. Price 3s. 6d.)

MR. HUNTER has done well to give us a new edition of his work. Instead of reviewing it ourselves we give the following from a recent number of *Land and Water*. It has also been favourably received by several other papers:—

"The first edition of this manual made its appearance early in 1875, and the second followed it so quickly that there was little, if any, difference between the two. Three years, however, have elapsed since the publication of the latter, and consequently Mr. Hunter has found it both possible and necessary to amend and extend his work—possible, because the science of apiculture has made considerable progress in the interval; and necessary, because without the revision and extension which have taken place a mere re-issue would have been of little service to the beekeeper. But now that public attention is being so much more directed to beekeeping, let us hope that this useful manual—which, by the way, may be bought for the very modest sum of 3s. 6d.—will be not without its influence, but will still further promote the science of beekeeping. It certainly contains all it is necessary for the beekeeper to know as regards theory, as well as much that is based on the practical experience of other writers on the subject, for Mr. Hunter has not contented himself with noting the results of his own knowledge and experience, but has gathered materials from every available source. Thus the well-known 'Langstroth on the Honey Bee,' the different 'Bee Journals' published in America and Europe, Mr. Cheshire's articles in the *Country*, 'King's Beekeepers' Text Book,' 'Neighbour's Apiary,' &c., have been frequently consulted, and the matter thus derived, added to the results of Mr. Hunter's own large and varied experience, makes this new edition of his manual as nearly perfect as possible. We cannot see that anything has been omitted which should have found a place in its pages. It does not contain any unnecessary or untrustworthy information. Moreover, its contents are well arranged, and the details clearly and concisely stated. Thus the 'Natural History of the Honey Bee' claims the first attention, and then follow in the order in which they are given, combs, beekeeping, natural and artificial swarming, hives, guide combs, &c., supers and their management, and indeed every branch of apiculture, while in each case the particulars are put together in a compact form, intelligently and perspicuously. Comparisons between systems are instituted where necessary; all the appliances are mentioned and described, and many of them have plates to illustrate their several uses and construction. The author, in fact, has done all in his power to place before the public a succinct and trustworthy sketch of all the latest and best inventions in apiculture, and by noting the method and results of apiculture elsewhere, and especially in America, to encourage people at home to engage in it far more extensively than they have hitherto. Mr. Hunter urges, and very properly, that a great source of wealth is lost to us either through our disinclination to engage in beekeeping, or because we do not turn to account the means and appliances which are continually being invented and prove so profitable abroad. There is every reason why, if the thing is practicable—and of that there cannot be a doubt—we should grow our own honey instead of importing it. Again, the manual will be found equally useful to the novice and the adept. The latter cannot fail to discover many useful hints for his guidance, and many facts which, having regard to the more limited sphere of his own operations, will be quite new to him; while the former will find the practical instruction sufficient to start him well, so as to make beekeeping, rationally conducted, a source of profit. There is likewise a good index appended, so that nothing has been left undone in order to present 'in a popular and handy form' a manual of beekeeping replete with all the latest and best information which is obtainable here or abroad, and which could be derived from the best works, British or foreign, which have been written on the subject."

Manual of the Apiary. By A. J. COOK, Professor of Entomology in the Michigan State Agricultural College. Third Edition. (Chicago: Thomas G. Newman and Son. 1878.)

ALTHOUGH this work has been published nearly a twelvemonth, we take this opportunity of calling the attention of our readers to it. Notwithstanding our desire to promote everything *English* in beekeeping, we are not too prejudiced to pass by without notice the good things of our neighbours. If a work full of interest,

beautifully arranged, entering thoroughly yet not confusedly into every *minutia*, nicely printed, and moderate in price, should deserve credit, then much praise is due to Mr. Cook, and his book should take a very high place as one of, if not *the* best work yet written upon apiculture. It begins at the very beginning of the subject. Chapter I. is on the bee's place in the animal kingdom, and it deals with the class, order, sub-order, genus, and varieties of the honey-bee. Chapter II. enters minutely, yet clearly and simply, into the anatomy, transformations, and physiology of the honey-bee. Next we have a short chapter on swarming, while Chapter IV. deals with the subject of the products of bees. Chapter V. is on hives and boxes, while the eleven next succeeding give instructions for bee management. Then we come to some most interesting reading on honey plants, followed by a chapter on the evils that confront an apiarist. The last chapter contains a short calendar and axioms. To crown the whole is a very full and carefully-arranged Index, which should make the work invaluable to beekeepers as a book of ready reference.

As far as our own opinion is concerned, Mr. Cook's manual is the most useful we have ever seen. It is amply illustrated with pictures of bees and their anatomy, cells, eggs, broods, different parts of the hive, honey-yielding flowers, and insects inimical to bees.

One remark of Mr. Cook should prove of interest to English beekeepers. He tells us that the honey-bee (*apis mellifica*) is native exclusively to the Eastern hemisphere, and not to the American continent, and that without doubt there were no bees of this genus there till introduced by the Caucasian race. The price of the book in England is five shillings, and it can be obtained from Messrs. Neighbour and Sons. We have made free use of this valuable manual, and our readers will find in other columns extracts of it which will give them some idea of the style of the book. We can heartily recommend it to experienced, as well as to non-experienced, beekeepers.

We have received—W. J. Pettitt's "Illustrated Catalogue," Capt. Martin's "Beekeeper's Almanac," and his pamphlet, "The Great Hampshire Bee Farm: its Principles and Method of Working."

THE GARDEN.

As most beekeepers are also gardeners, or, at all events, have the opportunity of becoming so, we shall from time to time give papers on the above subject. To begin with, we cannot do better than draw our readers' attention to a short story or sketch by Henry Kingsley, called "Hornby Mills Garden." It was published with other stories by the same well-known author by Tinsley and Co. in 1872.

For those who have not read the work we will give here a short sketch of it. Horticulturus and Viator, fellow travellers by rail, have a discussion on modern gardening. Viator is bitter against the system of "ribbon gardens." Horticulturus at first tries to defend the system, but his heart does not go with his words, and at last he gives his friend an account of a garden at a certain country-house in Lincolnshire which he saw when he was a boy, and remembered vividly now that he was a man.

It was a large house attached to a great watermill. The people of the house made their money by trade. "A busy, brisk house, until you opened a gate in the wall, and passed into the odorous silence and heat of the garden; here was a stillness scarcely disturbed by the cawing of the rooks. This was the ladies' quarter. This was the life's amusement of the two maiden sisters of the house, Aunt Bridget and Aunt Hester. On this garden they lavished all their own perfect refinement. To this garden I wish to call your attention as a type of an English garden now almost extinct; and before I have finished with it I think you will allow that I was right in speaking of the general *ménage* of this particular country-house."

"A rich acquaintance of ours, Mr. Dash, has made me laugh to-day by telling me of a letter he had received from a gardener who had advertised for a situation. This gentleman gardener said 'that he *did not like the tone* of Mr. Dash's letter, and thought the place would not suit him.' Now the old garden I speak of is not much smaller than my friend Dash's garden, and, I think, infinitely more beautiful. The one was kept in order by two old maids and a cripple; the other is handed over to the tender mercies of a prig who is an approver of the tone of his master's letter."

Horticulturus, after showing that in modern gardens "your

been filled, the power to use, or not use it, as she may deem occasion demands?"

A queen when she is laying eggs sets to work in this way. She first inserts her head into the cell, and then turns round, enters the cell backwards, and deposits the eggs. Why does she first insert her head, if not for examination? It seems probable that she first inquires what cell it is, whether worker or drone, and then uses her spermatheca or not, according to the result of her inquiries, and that she has some means of bringing pressure to bear, either internally or externally, upon the spermatheca. There are many, however, who will not entertain this idea, but think that the size and form of the cell determine the sex. While others are of opinion that a worker cell, being smaller than the drone cell, when the queen enters the former her sides will receive more pressure than when she enters the latter and larger.

Siebold quotes a case of a queen which, after having laid many worker as well as drone eggs, met with an accident, and ever after laid only drone eggs irrespective of the shape of the cell. This would appear, one would think, to be caused by the injury of some of the muscles or nerves brought to bear by the queen when she used her spermatheca. And it seems likely that, being prevented by the injury to these muscles from using the spermatheca, her eggs would resemble those of a virgin queen.

We come now to another question that is undecided. "Does the queen herself deposit eggs in the queen cell?" In other words, has the queen the power, or does it lie with the workers to decide when a new queen shall be hatched? For the eggs deposited in the royal cell are, as far as our knowledge carries us at present, exactly similar to those placed in the worker cells. Indeed a queen has been known to be developed from worker larva (*i.e.*, the maggot or grub which first appears from the egg after hatching, and which is afterwards transformed to the *pupa* or *nymph*, resembling a chrysalis, and finally to the *imago* or winged state). What is the mysterious influence that can thus change the destiny of the larva or the egg, and cause a queen to appear instead of a worker? That can bring forth a perfectly-organised female instead of one only partially developed? When the bees decide to rear a queen instead of a worker, they set to work and pull down the cells adjoining that which contains the selected egg or larva, and build instead a royal cell. They then feed the larva with superior and more plentiful food than that allowed to the larva of a worker bee, and these are all the means they use. And yet what marvellous results! By feeding the grub upon queen's food, they change not only its size and form, but its internal and external structure! Nor is this all. Their treatment changes an insect which lives but six weeks (the average duration of life of a worker in the summer season) to one that lives several years! It is the knowledge of this wonderful and mysterious fact that leads many students of the natural history of the bee to believe that the workers have the sole power of deciding when a queen shall be reared. And they believe that the workers, when they are resolved to exercise their power, take an egg from a worker cell and place it in a royal one. But let us hear what Professor Cook, an opponent of this idea, says on the subject in his manual.

"The eggs must be placed in these (the royal) cells either by the queen or workers. Some apiarists think that the queen never places an egg in the queen cell, but I have no doubt of the fact, though I never noticed the act. I have frequently seen eggs in these cells, and without exception in the exact position in which the queen always places her eggs in other cells."

Although we incline to agree with Professor Cook's opinion, we do not think there is any great argument in the position of the egg. Bees, with their proverbial neatness and love of order, would most probably imitate the queen in this respect. But we will continue the quotation:—

"John Hall, in the old work already referred to ('Bee-Master's Farewell,' published in London in 1796), whose descriptions, though penned so long ago, are wonderfully accurate, and indicate great care, candour, and conscientious

truthfulness, asserts that the queen is five times as long laying a royal egg as she is the others. From the character of his work and its early publication, I can but think that he had witnessed this rare sight. Some candid apiarists of our own time and country (United States)—E. Gallup among the rest—claim to have witnessed the act. The eggs are so well glued, and are so delicate, that, with Neighbour, I doubt the possibility of removal. The opponents to this view base their belief on a supposed discord between the queens and neuters (workers). This antagonism is inferred, and I have but little faith in the inference, or the argument from it. I know that when royal cells are to be torn down, and inchoate queens destroyed, the workers aid the queen in this destruction."

If queens may decide when "inchoate queens" are to be destroyed and their cells torn down, it appears probable that they would also have *some* voice, if not the sole decision, when the matter were reversed, and the need of a new queen was the question on the *tapis*. The argument against this supposition is that when a new queen is about to appear the old one uses every endeavour to destroy it, and that her antagonism to it reaches to such a height that the quondam ruler of the hive has to leave it and "swarm" off with only a part of her late subjects.

But Professor Cook, as if anticipating this objection, goes on to say—"I have also seen queens pass by unguarded queen cells and yet respect them. I have also seen several young queens dwelling amicably together in the same hive." Mr. W. Raitt, of Blairgowrie, records having had two queens on friendly terms, though working on different combs, in one of his hives. "Is it not probable that the bees are united in whatever is to be accomplished, and that when queens are to be destroyed all spring to the work, and when they are to live all regard them as sacred? It is true that the actions of bees are controlled and influenced by the surrounding conditions or circumstances, but I have yet to see satisfactory proof of the old theory that these conditions impress differently the queen and the workers. The conditions which lead to the building of queen-cells and the peopling of the same are—loss of queen, when a worker larva from one to four days old will be surrounded by a cell; inability of a queen to lay impregnated eggs, her spermatheca having become emptied; great number of worker bees in the hive; restricted quarters; the queen not having place to deposit eggs, or the workers little or no room to store honey; and lack of ventilation, so that the hive becomes too close. These last three conditions are most likely to occur at times of great honey secretion."

At present, then, this question has to remain unanswered. The Irishman, charged with murder, brought fifty witnesses for the defence who *didn't* see him do it. There are thousands of apiarists who have never seen a queen deposit an egg in a royal cell; let us hope that a few unimpeachable beekeepers will soon be able to inform us that they have, without doubt, seen the operation performed.

When the queen has laid her eggs the workers gather and bring in food, which they place in the cells. This is composed of honey and pollen. On this food the larva feeds—a drone being in the larva state six and a-half days, a worker six days. The cells are then capped over by the bees, the larva now being transformed into pupa or chrysalis-like state, and finally into the last or winged state. Although both the cells containing brood and honey are capped over, it is very easy to distinguish the one from the other. The cap over honey is concave, that over brood is convex. The latter is also darker, being made of wax and pollen, while the former is of pure wax. The worker-larva works round itself a cocoon of silk, and this remaining in the cell afterwards strengthens the structure. The worker emerges from the cell in twenty-one, the drone in twenty-four days after the laying of the egg. The queen requires less time. She remains in the larva state five days, and her cell is then closed up by the workers. She, too, spins a silk cocoon. For three days she remains as if dead, and then enters the nymph state. Sixteen days after the laying of the egg the perfect queen leaves the cell.

(To be continued.)

have all the runners taken off, and the earth between the rows coated with manure and turned over.

In the kitchen garden celery should be earthed up. Lettuces for spring and early summer should be planted out in some sheltered spot, seakale pots covered over to protect the plants from the frost. Potatoes and carrots must be dug up. All endives and lettuces should be tied up. Cabbages are now being planted out. It is best to gather tomatoes now, as the fruit will ripen after it is removed, but the frost, should it come, might spoil it.

All vacant garden ground will be the better for being turned over and ridged.

POULTRY.

INCUBATORS.

In accordance with the request of several gentlemen who have kindly told us that they intend to subscribe to the BEEKEEPER if we keep the promises we have made in our opening address, we shall each month devote a small space of our journal to poultry.

After the interest caused by the Hemel Hempstead Incubator Tournament, we think our readers may like to know something of the history of artificial hatching.

The art of hatching chickens by artificial heat has long been practised in China and Egypt. In the latter country the "incubators" are in the form of a rectangular brick or clay building, called marnal, each such building containing about fifty ovens, "whose bottoms and sides are formed of sun-dried bricks, lined with mats for the eggs to lie on, and the tops covered with sticks, except two spaces which are brick, and serve as hearths to contain the fires. They begin to heat the ovens in the middle of January, spreading on them every morning about a hundred pounds weight of camels' or buffaloes' dung, and the like quantity at night till the middle of February, by which time the ovens are too hot for the hand to be held to the walls. After this they put in the eggs to hatch, which they continue successively to the end of May. The number of these ovens placed up and down the country is about 400, and they usually keep them working for about six months. Each brood is perfected in twenty-one days, that being the time of incubation. It is easy in every one of the ovens to hatch eight different broods of chickens. It is said that every keeper of an oven in Egypt is under the obligation of delivering to the person who entrusts him with it two-thirds as many chickens as there have been eggs put under his care; and that he is a gainer by this bargain, as more than two-thirds of the eggs usually produce chickens. In order to make a calculation of the number of chickens yearly so hatched in Egypt, it has been supposed that only two-thirds of the eggs are hatched, and that each brood consists of at least 30,000 chickens, and thus it would appear that the ovens of Egypt annually give life to about 120,000,000 chickens." (J. A. Stewart.)

In 1777 M. Bonnemain gave much study to the circumstances of artificial incubation, and communicated the result of his researches to the Academy of Sciences, and for some time prior to the French Revolution he supplied the Parisian market with excellent poultry at a period of the year when the farmers had ceased to supply it. The Revolution, besides upsetting the Monarchy, upset M. Bonnemain's artificial poultry manufactory. Dr. Ure tells us that "his (M. Bonnemain's) apparatus derives peculiar interest from the fact that it was founded upon the circulation of hot water, by the intestine motions of its particles, in a returning series of connecting pipes: a subject afterwards illustrated in the researches of Count Rumford."

The apparatus of M. Bonnemain (we are indebted to the late Dr. Ure for our information) consisted of—

1. A boiler and pipes for the circulation of water.
2. A regulator calculated to maintain an equable temperature.
3. A stove apartment, heated constantly to the degree best fitted for incubation, which he called the hatching pitch.
4. A chick room for cherishing the chickens during a few days after incubation.

M. Réaumur also made a number of interesting experiments on hatching by artificial means. He found that the heat necessary for this purpose is that marked 32 on his thermometer or 96 on Fahrenheit's, the degree of heat being nearly that of the parent bird. Regulation of heat, he says, is that which the would-be hatcher must be most careful of, and regulation of heat is undoubtedly the greatest difficulty a would-be hatcher has to surmount. M. Réaumur used stoves, in which he placed boxes or trays. As the heat was irregular in different parts of the stove; he

moved these boxes about from time to time, never allowing one to remain in the same part of the stove more than twenty-four hours. The sides of the boxes were of wood, the bottom and the linings being of fur. After the chickens were hatched he kept them in these boxes for a few days in a room artificially heated.

M. D'Arcet gives the following account of a curious process of artificial incubation by means of hot-water mineral springs:—"In June, 1825, I obtained chickens and pigeons at Vichy by artificial incubation, effected through the means of the thermal waters of that place. In 1827 I went to the baths of Chandès-Aignes, principally for the purpose of doing the same thing there. Finding the proprietor a zealous man, I succeeded in making a useful application of this source of heat to the production of poultry. The advantage of this process may be comprehended when it is known that the invalids who arrive at Vichy, for instance in the month of May, find chickens only the size of quails; whereas, by this means, they may be readily supplied six months old. The good which may be done by establishing artificial incubation in places where hot springs exist is incalculable; it may be introduced into these establishments without at all interfering with the medical treatment of patients, since the hatching would go on in winter, at a time when the baths for other purposes are out of use. There is no trouble required in breeding chickens, by means of hot baths, than to break the eggs at the proper time; for, when the apartments are closed, the whole of the interior will readily acquire a sufficiently elevated and very constant temperature."

During the last half century the number of persons who have turned their attention towards the invention of a perfect incubator is nearly as great as that of the seekers after the Philosopher's Stone in the mediæval ages. Probably one great reason why the question has not been carried farther than it has is the fear of trouble in rearing after incubation has taken place. We remember some five or six years ago being shown an elaborate plan for ensuring the after rearing. The proposed poultry farm was to be large and complete. Plenty of money was to be spent over it, on the principle that a good outlay brings in a good profit. The buildings (we speak from memory) were to be in horse-shoe form, and would enclose a large yard. Entering this yard, the first door on our left would lead to the incubating room. The same source that generated the heat for incubating purposes would warm the two or three rooms next adjoining, and in such way that each chamber as it was farther away from the incubator was proportionately less heated. The idea was to gradually inure the chickens to the temperature to which they must ultimately become accustomed. Réaumur suggested that old hens, or even cocks, might be trained to bring up the young, but it seems to us that chickens, unlike infants, learn very early in life "how to take care of number one."

The contest of incubators at Hemel Hempstead resulted in a great victory for Messrs. T. Christy and Co., the percentage of eggs hatched in their apparatus being 97.18, while Mr. Cashmore, who came second, scored only 57.14 per cent. The analysis of the judging was as follows:—

	No. of eggs originally placed in incubator.	No. found unfertile on sixth day.	No. found fertile.	Number hatched out.	No. found in drawers unbatched at noon October 1.	Percentage hatched.
T. Christy & Co. No. 2.	80	9	71	69	2	97.18
C. Cashmore No. 2.	50	8	42	24	18	57.14
F. Howell No. 1.	100	33	67	38	29	56.71
T. Christy & Co. No. 1.	100	10	90	39	51	43.33
F. Howell No. 2.	60	7	53	20	33	37.73
Watson.	60	6	54	11	43	20.37
C. Cashmore No. 1.				Failed.		

We are sorry to hear that the unsuccessful competitors did not take their defeat well. Whether or not their objections are well founded, and their protest justifiable, we know not, but we are sorry that the disagreement (whatever may be its real origin) between judges, show-managers, and exhibitors should have arisen. It is not only, we perceive, at *beekeepers'* shows that dissatisfaction is expressed by the unsuccessful.

In Mr. Christy's incubator no lamp is required. It is heated by hot water, which is partly replenished twice a-day; that is to say, a portion only of the water is drawn off, and its place supplied by boiling water. We hope to be able at some future time to

servant is your master, and gardens for his own glorification," and that in the old-fashioned way your garden is a real pleasure to you, goes on to give particulars of the spot at Hornby Mills made so beautiful by the "two old maids and a cripple."

Few sorts of chrysanthemums were cultivated in those days, and "those of inferior sorts; but such as there were, were gay and gaudy enough. In an open winter their yellow had scarcely become tinged with the delicate rose-pink which marks their decay, when the Christmas rose (*helleborus niger*) began to blaze out in white patches of large flowers, at regular intervals, about the otherwise empty beds; and, before they were gone, the whole map of the garden was marked out by brilliant golden lines. The little aconite, planted thickly close under the box edging, showed the shape of each parterre in a hard, golden line. The garden, beautiful at all times, was seldom more beautiful than at the beginning of February, when the aconite and hellebore were in flower; but before the yellow bands and the brilliant white patches had begun to fade the colour of the garden had changed: the hepaticas, crimson and blue alternately, and giving a general effect of purple, planted closely just inside the aconites, marked out the beds once more with a new colour, and held on till nearly March."

"But by this time nature, under the guidance of our two ladies, had begun to rebel against formalism, and there was no more 'ribbon gardening.' After the hepaticas, the flower borders began to possess a new interest, and your admiration of 'bands of colour' became lost in the contemplation of individual beauty. From the centre of each bed, white, yellow, and purple, arose a corona of crocuses about two feet in diameter, matted thickly together, and the whole garden shone like fire, relieved by the moonlight effect of the snowdrops. Almost with them came patches of the pale pink dog-toothed violet, and the white dog-toothed violet with the purple eye (which last is, with very few exceptions, one of the most beautiful flowers in nature, and the roots cost sixpence a-piece). None of the above-mentioned roots were ever moved; they cost nothing whatever in maintaining; and, once planted, would flourish for ever, being far best left alone."

The italics are our own. Horticulturus then says that the flowers hardly succeeded one another in this wonderful garden. "The truth is there was no break. The crocuses were not fairly done, and the dog-toothed violets not half done, when a still more fantastic piece of colour trickery was ready for our eye. A ring arose round the fading crocuses, cunningly alternated in every other bed. In the one bed this ring was made up of cream-colour, pink, white, purple, all commingled; in the next, of a vivid scarlet, more vivid than most geraniums, nearly, or quite, equalling the brightest troppelum, and the bands were about a foot broad. What were these flowers? These were the anemones."

Horticulturus next describes a sheltered spot made beautiful with the common primrose, shining among ferns, a haze of blue violets mingled through them, with primulas of every variety. Polyanthuses, dull purple or fiery scarlet, pale and coloured primroses, auriculae, oxlips, cowslips, orchises from the meadow trenches, sombre-coloured fritillarias from the Oxford meadows, blue pasque anemones. Horticulturus, warmed with the remembrance of the exquisite beauty of this spot, becomes sentimental, and is called to order by Viator, but without avail. Ere long, however, he (Horticulturus) resumes the subject of the wonderful garden kept by the "two old maids and the cripple."

The parti-coloured anemones "were contemporary with the wallflowers which were in separate beds, and with the tulips which were in a close-planted ring round them, and which were, about the middle of May, removed to make room for geraniums, &c."

After a discussion on tulips and the working man, Viator is once more able to persuade his friend to again turn his thoughts to "Hornby Mills."

"Meanwhile, ever since the middle of February, a hot-bed had been made, and dozen upon dozen of flower-pots filled with choice flower-seeds, and by the time the tulips were removed the beds were ready for their reception. Carter's or Sutton's list will tell you what these plants were. China asters and stocks are those which live most in my memory; and of these, mostly the latter."

Viator is surprised at the mention of stocks, but Horticulturus is loud in their praises. "Zinnias, stocks, and salpiglossis," he says, "are the only flowers I can name, in the limits of my knowledge, which have good half tints. No stock with a positive colour about it is worth a halfpenny. The colour of a stock in its brightest tones should be ashy and funereal." Horticulturus, always inclined to be sentimental, becomes very much so now, until Viator interrupts him.

"Please don't! Where can you get the seed?"

"Page's, at Southampton. I don't see what reason you have got to interrupt me!"

Once more he is brought back to the subject of "Hornby Mills Garden," and he says—"Time would fail me were I to attempt to tell you of the beauty of these flower-beds in summer; of the mass of colour—confused, but always artistic—which grew brighter as the summer went on, and which lay around the towering spikes of the hollyhocks, the various lilies, and bee larkspur (*Delphinium formosum*, the most splendid of our perennials). These hollyhocks and bee larkspur were insignificant-looking things, just outside the anemones, if you will do me the favour to remember, not obscuring them in the least till they were out of flower, and then shooting up, and hiding the untidy crocus grass and the seedy-looking foliage of the anemones, until they in their turn died down with the first frosts of autumn."

"So much," continued Horticulturus, "for the most perfect and well-arranged garden I have ever seen, and, what is more, the cheapest. Let me recapitulate for a moment. The centre of each bed was filled in an oval or square of two feet—more or less—with thickly-planted crocuses; outside this, a ring of anemones; outside this, again, a ring of hollyhocks and delphinia; then a bare space of, say, four feet, to receive the summer flowers. Then the hepaticas, a hedge of ivy-shaped leaves in summer, for a few weeks in early spring a blaze of crimson and purple; then the closely-planted aconites, and then the box. Such was the garden. I can describe its colour, but the hot rich scent of it is beyond. The recollection of it makes me faint. It was the sweetest-smelling garden I was ever in."

We think the foregoing description of an old-fashioned garden comes in opportunely here. Many of the bulbs for early spring flowering should be planted out now. Apart from their beauty, most of the flowers mentioned by Henry Kingsley have the advantage of being loved by the bee; and in those bright sunshiny days which sometimes come to us in the early spring unexpectedly and unannounced it is as well to have something at no great distance from the hives for the eager bees to practise upon.

Some people will fear that Mr. Kingsley's plan will result in plenty of glare, but will lack the refreshing rest which plenty of green gives to the eye. To these we would recommend that the bulbs should be planted not quite so thickly, and that the earth above them should then be carpeted over with one or more of the following: aubrietias, arabis (white or purple—the former perhaps preferable under the circumstance), sedums, siolas, or silenes.

To the flowers mentioned by the author of "Hornby Mills Garden" we may add the different species of narcissus, iris (we have seen some very pretty dwarf specimens of this), scillas, ranunculi, jonquils, and hyacinths (single or the best for bee purposes), auriculas, &c.

For planting bulbs choose a fine day.

Pansies, pinks, double daisies of various kinds, may now be planted in the places where it is desired they shall bloom next year.

Gentians, double and single wallflowers, vineas, phloxes, &c., may be divided and moved ready for the next season.

Stocks for budding-roses should be sought for. "The dog-rose makes the best, and may be distinguished from the sweetbriar by the large white thorns which quickly cover the stem of the latter towards the base; and from those of climbing habit by the dark green colour of the bark and the weakness of the stem. Prune the old roots close to the stem, cutting all strong shoots off. When planted, some growers cut the head down to within four or six inches of the height at which they are wanted, and, having levelled the soil, leave them till spring. The best growers prefer leaving the head full until the plant is thoroughly rooted."

Rose trees may be transplanted now. In this operation great care should be taken in cutting away all broken or bruised roots. In buying roses it is as well to get them, if you can, from some gardens the soil of which resembles that of your own piece of ground.

Such evergreens as laurels, hollies, cedars, arbor-vitæ, &c., may be thinned or transplanted.

In the fruit garden the earth should be dug away from those gooseberry trees which have suffered from the caterpillar, and should be burned, that all traces of the grub may be destroyed.

Fruit trees, such as apple, pear, &c., may be bought and planted out now. In making your selection see that the roots are perfect, or nearly so. As in rose trees, trusses should be cut away. Old trees that are covered with moss may be washed with a strong solution of salt, or with lime-water. Strawberry plants should

the case of the honey in the lion's carcase, no honey comb is mentioned. The "swarm" of bees may mean only a gathering of greedy collectors. Here, too, in all likelihood it was towards evening when Samson found the honey. For he had gone to see his betrothed, and as he was pleased with her he naturally would not hurry away from her side. More likely still, however, the words "after a time" may mean "after some days." At all events, the question is, as we have said, a most interesting one, but there should be many gentlemen more learned than ourselves in the original Hebrew who could perhaps enlighten us further.

Query No. 2.—My parishioners all use straw skeps. They have no money to buy modern hives this year. What argument can I best use to stop them from killing their bees, and how can they best, and with least expense, keep them through the winter?—G. H. R., Cambridgeshire.

Answer to No. 2.—Tell them that their stocks, if kept through the winter, will be worth more money than three times the expense of feeding them. They should cut a hole in the top of the skeps and feed, as suggested in another column by "An Old Beekeeper." It is usual when stocks are weak to unite them before the wintry months, but we do not advise this now. It is too late, and requires a little more experience than we imagine your parishioners have had. Write us if the stocks are weak, and we will inform you further by post.

Queries 3, 4, 5, 6, 7 and 8 from T. J. W., H. A. W., Clackmannan, Herbert Eyre, Robert S., and Miss G. L. C. N. have been answered by post. If information not sufficient, please write again.

Query 9.—Rev. D.—We never saw or heard of the work. No trace in the British Museum. Will insert it in the "Libri desiderati" list there. Fancy it must have been circulated privately and printed at some provincial press. Will write if the authorities at the Museum obtain a copy.

Query 10.—Helen.—1. Yes. 2. Formerly Cottage Gardener. 3. Doctor John Hunter. 4. Complete.

A STANDARD HIVE.

It has been suggested that we should use our endeavours towards the establishment of a universal standard hive. We would gladly do so did we think our efforts would be of any avail, but we know that they would not. The question has been discussed on several occasions, and all that resulted from it was ill-spirit and no little personal invective.

To establish such a standard, beekeepers would, in the first instance, require some power in authority, to whose discretion the decision of the question should be left. But there is no person, nor is there any body of men, whose dictum would be received as final by our apiarists.

The establishment of a standard hive is one of those heartily, to-be-desired things that must be left till the millennium.

Even were it possible to establish a standard hive it would be impossible to get it adopted. Hive makers who have been in business for several years, and who have obtained a large *clientèle*, however much they might themselves desire to abide by a standard hive, could not persuade their regular customers to adopt it.

All things considered, a standard hive is an impracticability.

THE HONEY HARVEST IN SCOTLAND.

To the late and short harvest in our cereal crops has to be added the failure of the north-east coast fisheries, which have only produced about one half of the result of last year's fishing, which will prove a heavy loss to fishermen and merchants alike; the latter, on the faith of a successful fishing, being in the habit of advancing not only groceries and articles of clothing, but in many cases money as well. The failure of still another harvest, although of less account from a monetary point of view—that of the "busy-bees"—will be felt by a class of the country peasantry who can ill afford to suffer loss, which in turn will fall to be felt by the retail dealers of the immediate neighbourhoods. "Scotch honey" will, we are informed, be a rarity this season, the labours of the industrious "busy bee" being so much retarded by the continuous wet weather. Indeed, we have been informed by a beekeeper that in addition to the loss sustained from this cause he has been compelled to feed most of his "swarms" for some time back, their own labours not being sufficient to retain life.—*Grocer*.

A FEW PROOFS THAT THE BEE WAS INTENDED TO BE DOMESTICATED BY MAN.

BEES are as much intended to be domesticated as cattle are, and everything about them tends to prove it. So wonderfully, indeed, is this apparent that we would advise any man who is at all sceptical of the ineffable love and boundless wisdom of the Creator to straightway keep bees and study their ways. Let us mention a few proofs that show we were meant to be their masters.

Mr. Langstroth observes: "A new swarm often takes possession of a deserted hive, well stored with comb; whilst if dozens of empty ones stand in the apiary, they very seldom enter them of their own accord. It once seemed to me that an instinct impelling them to do so would have been much better for us than the present arrangement; but further reflection has shown me that, on the contrary, it would have been the fruitful origin of interminable broils among neighbouring beekeepers; and that in this, as in so many other things, the instincts of the honey bee have been devised with special reference to the welfare of man."

Many persons are prevented from enjoying the interesting pursuit of beekeeping by a fear of being stung. Now a bee never acts on the offensive, and if not enraged is perfectly harmless. Is it likely that a bee which loses its life (and probably knows and feels that it will do so) by the act of stinging would be so utterly regardless of that life as to throw it away without a cause? At all times repugnant to attack, the bee is still less inclined to do so when it is laden with honey. If a hive is disturbed and the bees frightened what does their instinct prompt them to do? If you blow a few puffs of smoke into a hive, or rap it on the outside, or disturb it in some other way, all the bees at once set to work to gorge themselves with honey, so that they may be prepared in case they are forced to find a new home to commence comb-building at once; and being so gorged with honey they are comparatively harmless, and very loth to sting.

A wasp, unlike a bee, can sting as often as it likes; but, then, a wasp is a thief. But the drone is a thief, and it has no sting! Is this a paradox, or is there a cause? The drone is the only male bee in the hive, and consequently is necessary to the existence of a hive. But a time comes when the hive is full of honey, and the drones are no longer required. If left alone they will do no work, but will soon eat up all the fruits of the workers' labours. It becomes necessary, then, to expel them. Were the drones provided with stings it would be only after great trouble that the workers could drive them out, supposing always that after a struggle they (the workers) were victorious, which would by no means be a matter of course. And not only this. If every worker who wished to turn out a drone were obliged to use her sting, how quickly would the population of the hive decrease! As it is, the worker can easily drive out the drone (which is much larger than herself), and in doing so she manages to clip the idle fellow's wings in such a way that he cannot re-enter.

The fact of a swarm of bees attaching itself to the queen, and clustering in such a manner as to render themselves easily taken, also tends to prove that the bee was intended for the service of man. Before a swarm issues from a hive scouts are sometimes sent out to search for a likely place to found the new colony and to commence work. Here the wonderful instinct of the bee seems at first sight to be at fault, for a swarm often settles in the most unlikely places. Undoubtedly they are taught to do so, that man may the more easily take possession of them.

Bees always store when they possibly can many times more honey than they can ever want for their own food. A bee, in the presence of sweets, cannot resist gathering and storing. For whom, then, is the surplus meant, if not for man?

A SINGULAR discovery has been made at Petit-Cortailod, on Lake Neuchatel, which is now so low that the banks in many places are in danger of falling in. The find consists of a single pile or pillar, one metre sixty-five centimetres long, of remarkable form, and surmounted by a capital, underneath which are bored five holes corresponding with five similar holes at the other extremity. The capital is cone-shaped, and the space between the openings has been carefully rounded with an axe. Conjectures as to the purpose for which this object was used are numerous. At first it was taken for a lake-dweller's idol, but the most probable theory is that it served as a tool for the bending of bows, an idea which is derived from the size of the holes and their distance from each other. The instrument, which is attributed by experts to the age of stone, and is in a good state of preservation, has been placed in the museum of Boudry.

give a full description of this incubator. Two things speak highly for it—it was successful, and it is simple.

HEMEL HEMPSTEAD POULTRY SHOW.

The second show, as above, took place on the 1st and 2nd inst. There was a goodly number of exhibits, and some of the birds were very fine specimens of their respective classes. We have not space to give the list of entries and prizes, but may briefly mention the Brahmans, Dorkings, Polands, Crève-Cœurs, Andalusians, and Leghorns as making a very creditable show. The exhibits in the "Any Other Variety Class" were interesting, and were a black Minorca cockerel (very fine), a black Hamburg ditto (also very fine), a La Flèche cockerel, a black Hamburg pullet, and a Malay pullet.

The prize for poultry appliances was awarded to Reynolds, of Compton-street, for a very good selection, including some good fountains, and very perfect coops for hens with chickens.

Christy showed a good basket for sending fowls a distance to market or on a long journey, as it contained a water supply not easily exhausted.

We cannot commend the points prizes, which as usual, led to the exhibition of well known birds, but not in the owner's name.

The exhibits in ducks showed nothing remarkable, but there was a fair display of pigeons.

The Hon. Secretary to the British Beekeepers' Association was one of the most successful of the exhibitors of poultry, while "his man," Mr. Clapp, was doing well at the Honey and Bee Show.

MERTHYR TYDVIL POULTRY SHOW.

A poultry and pigeon show was held at Merthyr Tydvil on the 8th and 9th instant. Entries were plentiful, the arrangements of classes and prizes having been admirably carried out. The exhibits of poultry were, on the whole, very good; pigeons were well represented.

OXFORD.

A poultry show which promises to be a great success is to be held at Oxford on Wednesday and Thursday, the 22nd and 23rd, something like one hundred and fifty pounds being offered as prizes. There will be several special classes for local exhibitors. A pigeon show will be held on the same occasion. The judges for Poultry are:—Mr. E. Hewitt, Mr. R. Teebay, Mr. J. Martin, Mr. G. S. Sainsbury (Waterfowl); for Pigeons, Mr. F. C. Esquiant, Mr. P. H. Jones, Mr. H. Allsop, and Captain Norman Hill. There are four classes for dead poultry, which will be judged by expert poulterers.

THE POULTRY CLUB.

The Poultry Club are now met in the Agricultural Hall at Islington, their show being carried on at the same time as the Dairy Show, viz., on the 14th, 15th, 16th, and 17th inst.

The show of poultry and pigeons, though not quite so numerous as last year, is very good in quality in spite of a most unfavourable season. In fowls, Dorkings are remarkably good; Cochins fair, but inferior to the Brahmans, which are in strong force, the dark breeds being just now apparently the fashionable colour with the fanciers. The Game-fowl Class is very fine, and though there are samples of the thrifty French breeds of the Houdans and Crèves, they are not so varied and numerous as they deserve to be. Ducks are the best class in the show, and the newly-introduced Pekin breed, which are rapidly becoming general favourites, from their large size, hardiness, and thrift, are well represented. Mr. Christie shows his incubators, chicken nurses, and sundry ingenious appliances for artificial hatching and rearing, while the class of killed poultry shows the efficiency of his ingenious apparatus for cramming fowls put up to fatten. The operation of judging occupied the whole of the morning, the public being admitted on its conclusion at 1 p.m. There were still some few details of arrangement to complete when we left on the first day, but these were concluded during the same afternoon. We were not in time to give the prize list.

LATEST LONDON PRICES OF GAME AND POULTRY.

Ducks, 2s. to 2s. 9d.; ducklings, 2s. 6d. to 5s.; geese, 4s. to 8s. 9d.; young turkeys, 8s. 6d. to 12s.; pheasants, 2s. 6d. to 4s. 3d.; partridges, 2s. to 4s.; plovers, 6d. to 9d.; teal, 10d. to 1s. 6d.; pintail, 1s. to 1s. 8d.; wild ducks, 1s. 6d. to 3s.; widgeon, 10d. to 1s. 6d.; hares, 2s. 6d. to 4s.; conies, 9d. to 1s. each.

NOTES AND QUERIES.

NOTICE TO CORRESPONDENTS.

We do not undertake to reply at once to every query we receive, although we shall always endeavour to do so. Those beyond our power of answering we shall invite our readers to discuss.

Those queries that we think too simple to appear in THE BEEKEEPER we shall answer by post.

Subscribers wishing for replies by post may have them if they will enclose in their letters stamped directed envelope. We cannot undertake in every case to answer by return, but shall do so when possible. Queries that we are doubtful of solving accurately we shall submit to some of our experienced subscribers who have already kindly promised to help us, and enquirers must in these cases grant us the requisite time to obtain the best information. If, instead of receiving answers by return, our correspondents are kept waiting four or five days, they will know that we are consulting some of the best experienced apiarians.

Name and address must accompany all enquiries, but not necessarily for publication.

No. 1.—I read in 1 Samuel xiv., 25 and 26: "And all they of the land came to a wood; and there was honey upon the ground. And when the people were come into the wood, behold, the honey dropped." Verse 27 says that Jonathan "put forth the end of the rod that was in his hand, and dipped it in an honeycomb, and put it to his mouth." Again, in Judges xiv., we are told that Samson killed a young lion that roared against him. He left the carcase, and (verses 8 and 9) "after a time he returned, . . . and he turned aside to see the carcase of the lion, and behold, there was a swarm of bees and honey in the carcase of the lion. And he took thereof in his hands, and went on eating, and came to his father and mother, and he gave them, and they did eat." Can you or your readers inform me—

1. What kind of bees would have collected this honey?
2. Why in Jonathan's case did the honey drop?
3. By what means could the bees make their comb and bring in so much honey in so short a space of time (a few hours) to the carcase of the young lion?

Yours truly,

"IGNORAMUS."

Answer to No. 1.—The first query with which we are favoured is decidedly an interesting one. The bee, in all probability, would be the Fasciata or Egyptian bee, which is small, well marked with yellow—hardy, a good worker, but inclined to be offensive without much provocation. That Canaan was a land flowing with honey may be more literally true than is generally imagined, and what at first sight appears most extraordinary, if not impossible, in the cases cited, may, after all, tend to prove the truth of Sacred Writ. Mr. Cook says, "I remember one morning while riding on horseback along the Sacramento River, in California, I broke off a willow twig beside the road, when, to my surprise, I found it was fairly decked with drops of honey. Upon further examination I found the willow foliage was abundantly sprinkled by these delicious drops. These shrubs were undisturbed by insects, nor were they under trees. Here there was a real case of honey dew." Perhaps honey dews are equally prolific in Palestine. Bees, with their well known penchant for sweet things, would quickly swarm about such a treasure trove as this. Of course some more than usual heat may, in the first case mentioned by "Ignoramus," have melted the comb, and the honey would in consequence have "dropped." Yet the theory of honey dew seems the more probable, notwithstanding the occurrence of the word "honey comb." Bees would in all probability form their colony where honey was plentiful. And if such honey dews as this were frequently found our intelligent pets would not be ignorant of it. We do not read that the honey had dropped, but that it "dropped," which seems to imply that it was in the act of dropping. It was evening, and presumably therefore cooler, when Jonathan and his men came to the wood, for we read that "the men of Israel were distressed that day," for Saul, under the threat of a curse, had forbidden them to eat, and they would not have become so faint in the daytime. In

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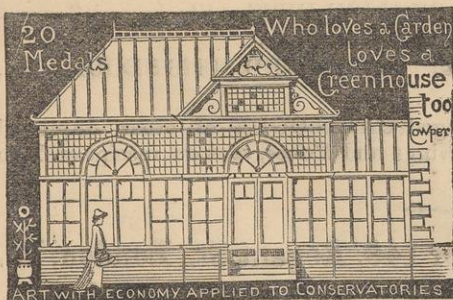
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OUR EXTRA PRIZE.

A CORRESPONDENT writes to ask us if, in saying "the essay for which the prize is given will become the property of the proprietors of the BEEKEEPER," we mean that we shall claim the sole right of making the hive described. This, of course, is not our intention, but we mention this letter lest any other of our readers should have formed the same impression. We have also been asked whether sketches or drawings must accompany the MSS. To this we reply, there is no necessity. Before publishing the Prize Essay we should ourselves procure sketches for illustrations, which we should submit before giving them out for execution, for the approval of the successful writer. The size of the essay should not exceed six pages of the BEEKEEPER. As we are anxious to give the utmost care and attention to the competing essays, and to be as fair as possible in the decision of the prize, we should be very much obliged if intending competitors will be equally considerate for us, and send in their essays at as early a date as possible. We beg them to pay careful attention to the conditions for competition. Any further question sent to us about the Extra Prize we shall be glad to reply to by post. Address Editor.

LECTURES.

LECTURES, properly conducted, should be a useful and prolific means of swelling the numbers of the beekeepers in our country. We say, "if properly conducted." The question is, how can they best be given?

That they may be beneficial they must be systematically arranged. Nearly all the literary and philosophic institutions, the young men's societies and other such bodies in our country towns arrange for courses of lectures during the winter months, and these lectures are a great boon to the inhabitants. If they learn little from them, they are at least useful as a break to the monotonous routine of a winter in the country. Perhaps this way of looking at it is the exception, and not the rule, with the audience on such occasions. At many lectures, however, although a person may come away with two or three wonderful facts impressed upon his mind, facts the novelty and wonder of which have for the moment caused attention and perhaps thought, yet they are soon forgotten. Take, for example, a lecture on "Glaciers and the Ice Period." Out of this subject some of the most interesting of lectures have been drawn. A man hears that rocks newly uncovered show lines or traces of lines upon their surface, and that the scientific men who have studied such matters deduce from this one of the many proofs they have that the whole land was once overridden with icebergs. This isolated fact becomes fixed for a time in the listener's mind.

He finds the lectures so much more interesting than their dry titles seemed to promise that he intends to attend the next. Say the subject this time is "The Atomic Theory." He hears that although a man when alive weighs ten, eleven, twenty stone, and that when dead and cremated his ashes weigh a few pounds at most, that not one-millionth part of an ounce of that weight has been lost to the earth, and that this world is now as heavy, to the turning of the scale by a hair, as it was when the Creation was completed. Here, again, is a fact that astonishes him and that he remembers. More than ever interested, he goes to the next lecture on "Myths and Legends" perhaps, and hears that in the literature of nearly all nations we find similar legends—such as that of the strong man Hercules in Roman, Heracles in Grecian literature, and bearing different names, but doing almost identical things according to the writings of the Indians, Arabians, Syrians, Chinese, &c. This, again, strikes him as being very curious, and he remembers it. Next he goes to a lecture on the "Hymenoptera," and learns one or two wonderful facts about the honey-bee.

Ask him, when the course of lectures is concluded, to give you some information on the subject of the "Ice Period," or desire him to define a "Myth," or tell you what the thorax of a bee is, and how much can he quote from his recollections of the lectures? Nothing!

We are talking now of the man of humble station and of little or

no education, who, however much he may wish it, has no means of carrying on privately the study of which he has heard a little, and by which he has been interested a little publicly. Perhaps these lectures are not intended for such people. Very likely not, but with that question we do not wish to deal.

In some of our larger towns there are Saturday afternoon lectures for the working classes, and these lectures are nearly always well attended. The subjects are simple yet of practical interest, and the lecturer, if he knows his business, takes it for granted that his hearers know nothing whatever of the subject of the lecture. Is he right in acting on this assumption? Decidedly. Some of the audience do know something of the subject, but a repetition of their knowledge, and a classification and putting in order of the same, does them good. It must be apparent, also, that working on this principle must be decidedly best for those of the audience to whom the subject is new.

Our experience tells us that much difficulty is put in the way of those who are anxious to commence the study or practice of apiculture by writers and lecturers using technicalities that are quite understood by the accomplished, but are "Hebrew" to beginners. And lecturers, as a rule, always seem to think it *infra dig.* to talk of the elements of the science of bee culture—a great mistake. Their audience, after listening carefully for an hour or so, leave the lecture-room saying, "Beekeeping must be a very difficult subject to understand!" The lecturer himself obtains all the more credit for being a wonderfully clever man, but he gets this credit at the expense of a loss to the advancement of apiculture.

We should like to know whether it is not possible for the British Beekeepers' Association (we address ourselves to this society as being the leaders and directors of apiculture) to arrange for a series of consecutive lectures, such series to be delivered *ab initio*, at all the leading market towns around which cottage beekeepers "do moste ongregate." The expense, should there be a deficiency, to be defrayed by subscription, a very small sum being asked for admission to the lectures, but plenty of early advertisement of them being first given. To lessen this expense many beekeepers would, we have no doubt, gladly entertain the lecturer during his necessary stay at the place where the lectures are to take place.

As to the lectures themselves, let the association draw them up, or at all events supervise them before they are written.

Many persons who could not be persuaded to read and study the simplest of printed instructions would gladly listen to the delivery of the same by word of mouth.

HIVES.

ALTHOUGH we offer an extra prize of ten guineas for an essay on the subject of "How to make a hive," we would by no means recommend a beginner to commence by manufacturing his own hives. We think any man, however good a carpenter, would make a mistake were he to purpose doing so. Our advice is, buy at least one hive of some manufacturer who is well known as an authority and who can be depended upon, and you can afterwards, if you think fit, try your "prentice hand" in copying it. We, of course, being an independent journal, cannot recommend any one particular hive maker, but our readers should find no difficulty in discovering who the leading hive makers are. We advise, however, that all those who intend to start apiculture in the spring should, if their means permit, purchase a hive or two now. This, we believe, is contrary to general advice; but does it not stand to reason that anyone who has three or four months to examine and study the principle of the hive will be better acquainted with its workings than he who only purchases a day or two before he wants it? In all the emergencies of our precarious life it is well to be prepared. Equally so is it right to be prepared for beekeeping.

We cordially agree with the *Field* of the 11th inst. in regarding the following as a "curious incident":—"On the 16th ult. a gentleman in Scotland named Smith having finished his day's shooting, on counting the result regretted audibly that he had not bagged a black-cock, when to his gratification and surprise one fell dead at his feet. On looking up to see whom he should thank for this unexpected boon, he noticed a golden eagle, which had no doubt relinquished its own meal to gratify the wishes of Mr. Smith."

THE *Haddingtonshire Courier* advertises for a "Woman or widow (elderly) to take charge of poultry and cows." When it next meets with a widow who is not a woman we hope our contemporary will let us hear of its discovery.