

mass of practical information. The next work that will meet the student's growing requirements, one from which he may learn much respecting the structure and classification of insects, is *Packard's Guide to the study of Insects* (American Naturalist Press, Salem, Mass., price \$5.00). It contains a very large number of illustrations of American insects, affording upwards of a thousand figures, and is the best manual for the Canadian student that has yet been published.

The foregoing are works that every one who collects or observes insects at all ought to have. But if one goes on to study entomology, he will probably soon find that he must confine his attention almost exclusively to some one order if he wishes to do any thorough work; the field is too large to be entirely embraced by anyone who has not unlimited time at his disposal. The student will find admirable treatises on special orders among the publications of the Smithsonian Institute, at Washington, e. g. Le Comte's *Coleoptera*, Loew's *Diptera*, Morris' *Lepidoptera*, Scudder's *Orthoptera*, &c. In general entomology he cannot find a better work than *Westwood's Modern classification of Insects*, (London: Longmans, 2 vols. 8 vo.); it is now unhappily out of print, but copies can occasionally be obtained at second-hand booksellers in large cities. In order to keep himself acquainted with the progress of the science, the student will require to procure the current periodicals upon the subject, e. g. *The Canadian Entomologist* (London: \$1.00 a year), and the *Transactions of the American Entomological Society*, (Philadelphia: \$3.00 a year); he will also do well to take in the *American Naturalist* (Salem, Mass., \$4.00 a year), and if he can afford it some English and foreign publications. The annual reports of the state entomologists will be found to contain an immense mass of valuable descriptions and observations, especially those of Fitch (N.Y.), Walsh & LeBaron (Illinois), Riley (Missouri), Packard (Mass.), Lintner, Glover and others, not overlooking those of our own Canadian society.

Most of the above mentioned works can be obtained through the principal Toronto booksellers at the prices stated; others, such as the "Reports" are not so easy to procure but may often be obtained at the "Naturalist's Book Agency," Salem, Mass.,—a useful repository for scientific works of all kinds.

Our correspondent also asks what microscope he should procure in order to study animal and vegetable physiology. To ask a naturalist to recommend a microscope is like asking a lady what sewing-machine she prefers; the reply is almost sure to be the particular one that the individual chances to possess. There are very large number of different microscopes manufactured at the present time, varying very much, of course, in excellence and in cost, but many of them admirable instruments. The choice depends greatly upon the pocket of the student; if he can afford it, nothing will give him greater satisfaction than the purchase of a good English instrument. Our own preference is for those of Smith & Beck; they can be obtained from ten pounds sterling up to any amount the purchaser pleases; their "Binocular popular Microscopes" are well adapted for all ordinary work, and will take all the extra fittings and powers that one chooses to invest in. There are said to be some really good cheap microscopes made in Germany, but we have never yet seen an inexpensive instrument that was worth having for purposes of study and research.

W. H. CHEEVER & Co., of the North Attleboro, Mass., market, recently slaughtered a yoke of oxen that weighed 5528 lbs. The dressed weight of one was 1997 lbs., and of the other 1865 lbs., fed by Josiah Richards of North Attleboro. At the Attleboro fair, one year ago last fall, 6 yoke of working oxen were exhibited by Richards & Bros., averaging 3500 lbs. per yoke.—the heaviest weighing 4100 lbs.

Adulteration of Seed.

The secrets of the seed trade have lately had a thorough ventilation in England, and the facts brought out before the committee of the House of Commons which investigated the matter, have been most startling. They were shortly as follows:

That pure "seed" (that is seed of the last year's growth), cannot be obtained from retailers, who do not raise their own seed.

That the overplus of any year's seed is not destroyed, but is kept to mix with and adulterate the seed of the following year. The mixture of old and imperfect seed with new seed varies from twenty-five per cent. to seventy-five per cent. according to the scarcity of the various kinds of new seed.

That there are large establishments in Britain for the "killing" of seed. This is done by kiln-drying at such a heat and for such a length of time as to destroy vitality. This "killed" seed is a regular article of merchandise, and is sold in large quantities to the trade, for the purposes of adulteration. Thus turnip seed (when there is an overplus of any variety and all seeds of the same class whose cheapness admits of it) is "killed" and mixed with new seed of similar appearance and greater value. This seed after preparation is polished and prepared by oiling and machinery to look like new seed.

For example if a man has an overplus of Belgian carrot seed, which he cannot sell, or is doubtful of its vitality, he has it "killed," and he can then mix it with the more expensive kinds, and as the seed is "killed" the fraud is not discovered by the grower. In this manner the most expensive seeds such as cauliflower, brocoli, etc., are largely mixed with other small "killed" seeds of a similar appearance. The same plan is adopted with clover seed. Foreign seed which is inferior and cheap, is "killed," and mixed with that of home growth. Where the seed does not carry the right appearance, it is even stained, painted, and polished and renovated in appearance, so that even an expert cannot detect the fraud.

These practices have been for years carried to such an excess, that at length some five or six of the great seed houses rebelled against them; and after exposing the frauds, applied to the British Parliament for relief. The consequence was the passing of an act 32 and 33 Victoria, Cap. 112, making all such practices criminal offences, and strictly prohibiting the killing establishments, and the sale or preparation of killed and dyed seeds. As it was scarcely to be expected that many of the large establishments and the more unprincipled of the dealers, would lose all the inferior seeds they had on hand, it was whilst the act was under discussion hurried abroad at any sacrifice. Every farmer who buys seed ought to sprout 100 grains and test their germinating powers. If he finds the seed good and that it all grows he must look for the remedy for a bad plant to his own mode of sowing it.

Oiling Rose Bushes.

Mr. George Gordon, in the *Gardener's Magazine* (English), considers oil to be the grand restorer of half dead roses. Horticulturists in the United States are not so well satisfied of the value of oil as an application to shrubs and trees, the experience here being decidedly adverse. Below we give what the correspondent says:

"A gentleman whom I had the honor of being introduced to the other day, at Hornsey Lane, and who is an enthusiastic amateur, planted a quantity of standard roses last February. Well, some of these started away vigorously, others died without much ceremony, but two would do neither. The bark of the stems and branches kept green, but not a single bud made any sign of starting right up to the middle of July, notwithstanding their being kept well watered throughout the whole season. Being a deep thinker, he thought over the subject and came to the conclusion that the bark must be so contracted that sufficient moisture could not ascend to start the growth.

Matters could not well be worse; so he thought he would try the effects of a good oiling upon one of them. Acting upon this resolution, he gave the whole of the branches and of the main stem a thorough good dressing of ordinary colza oil, two successive mornings, such as is used for burning in moderator lamps. The effect was marvellous, for in a very few days the buds pushed, and grew with the greatest rapidity and made stronger and finer growths than those which started in spring. When I was there, it had the largest and healthiest head of any of the newly planted trees; but the one not oiled was quite dead. I shall withhold the name of the gentleman, otherwise I have no doubt his garden gate would be besieged for the next month by the curious, who are never satisfied unless they can "go and see," and thus give him a lot of trouble which I do not feel justified in doing. But, as a proof of its correctness, I will subscribe my name, and, were further proof necessary, I will just mention that a very old friend of mine, Mr. Chetwood, of the Hornsey Lane Farm, Highgate, has watched it throughout the whole process, and, in fact, during the whole summer.

Flax in Britain.

The Irish Flax Supply Association has just issued a report on the state of the flax industry, in which full returns are given in regard to it. From this report it appears that in the Three Kingdoms there were 174,251 acres devoted to the flax crop in 1871, and 138,860 acres in 1872—distributed as follows:—

	1871.	1872.
Acres in Ireland.....	156,883	122,003
" " England	15,949	15,011
" " Scotland	1,244	1,262
" " Wales	175	84

We are not informed as to the weight of flax obtained in the other Kingdoms; but in Ireland the total flax crop of 1871 was 13,612 tons; and in 1872, 18,920 tons—showing, in 1872, an increase of 39 per cent. in the crop, from an acreage diminished by 22½ per cent.

As to the quality of the flax in 1872, the report says. "Had the weather been even moderately favorable during the season, when the retting and grassing processes were being carried on, the yield per acre would probably have compared favorably with the highest that has ever been obtained in Ireland; but, in consequence of the unavoidable exposure while on the grass, the flax softened, and was unable to undergo the scutching operations without inordinate waste. The flax crop, previous to being pulled, promised to be everything a farmer could have desired, and, notwithstanding the serious injury which it sustained through the unparalleled wetness of the season, reports of prolific yields have been received from many districts in Ireland, and flax on the whole suffered comparatively less than other crops. It has been frequently urged that till farmers give flax a steady but very moderate place in their rotation, they will never derive the benefit which results from its culture. One acre sown on suitable and carefully-prepared ground, with selected seed, will be more profitable than ten acres under reverse circumstances."

Guelph Easter Fat Cattle Show.

The Easter Fat Cattle Show and Fair, under the auspices of the South Wellington Agricultural Society, came off under most unfavorable circumstances as regards weather and the state of the roads. Still the number of persons present was very large, and the turn out of cattle exceedingly numerous. It is computed that about 500 head changed hands; many that were brought in being taken home again, on account of prices not coming up to the expectations of sellers. The quality of the cattle was particularly good, and buyers from all portions of the Province were present in considerable numbers. Prices ranged from \$3 50 to \$6 00 per 100 lbs. for the fair ordinary class of cattle, while from \$6 00 to \$10 00 per 100 lbs. was given for some of the fancy stock. There were comparatively few sheep on the ground.