SCIENCE.—SUPPLEMENT.

FRIDAY, APRIL 16, 1886.

INVENTORY OF PHILOSOPHY TAUGHT IN AMERICAN COLLEGES.

IN the general overhauling which the college curriculum has been receiving of late, there has been one subject quite generally overlooked, — that of philosophy. Apart from an occasional editorial note in the columns of *Science*, I have seen next to no allusion to the matter. Yet it is difficult to see how we are to develop a high grade of national culture in science and in literary matters without contact, by way either of stimulus or of mirroring, or of both, of these matters with philosophic principles. Where this contact is to occur, unless in college, it is also difficult to see. I have no intention of discussing these matters here; but I wish to give an inventory of the present condition of philosophic instruction in our colleges, based upon the catalogues of these institutions. Neither my knowledge nor the limit of space allows me to go beyond a consideration of the subject taught to discuss methods, etc.

The philosophic discipline of the ordinary American college is a survival of that period of its existence when its especial deed was to furnish to the community well-fortified ministers of the gospel. The catalogues of our colleges reveal all stages of evolution from this original source, but all show their genetic connection. The extent of the evolution may be shown by considering the courses of four of the older New England institutions, selected from as many states. In Dartmouth the instruction begins with a twenty-four-hour course in natural theology, followed by twenty hours of anthropology. The *piece de resistance* is sixty hours of psychology (Porter's 'Elements'), which is supplemented by courses in ethics (twenty-five hours), history of ancient philosophy (twenty-six hours), aesthetics (fifteen hours), and, to complete the circle with which the instruction began, a thirty-hour course in the evidences of Christianity. All this, certainly no insignificant amount, is required work. There is one elective of 'thirty-two hours in the history of modern philosophy.

Crossing the Connecticut River, and coming to the University of Vermont, we find the following courses: psychology (Sully), logic (Davis's 'Theory of thought'), ethics (Calderwood), a short course in aesthetics, another short one in the evidences of religion, and quite an extensive course in metaphysics, in which Watson's 'Kant's philosophy in extracts,' and the exposition of Kant by Professor Morris, are used. At Williams, as in the University of Vermont, all philosophical work seems to be required, the curriculum including the following subjects: anthropology (Hopkins's 'Outline study of man'), logic, theology (dogmatic, apparently), natural theology (through the medium of Flint's 'Theism,' and Butler's 'Analogy'), ethics, and the history of philosophy. At Brown we find logic, three hours a week; intellectual philosophy, four hours, including studies in Hamilton, Kant, Porter, Sully; ethics, five hours, including Wayland, Calderwood, Kant, etc. There is also a course in natural theology. In addition to these required courses, there is an elective in the history of philosophy.

None of these colleges, it will be observed, is now a professedly denominational college. It may be well, accordingly, to add one which is; viz., Trinity. Here the required work is ethics (through the medium of Wayland), Butler's 'Analogy' and his sermons, metaphysics (Sir W. Hamilton), and courses in psychology and logic. Elective courses are those in anthropology (Hopkins); ethics, two courses, — one in Haven, and the other in Whewell and Plutarch, and metaphysics (McCosh). No very great differentiation is observable in these courses, although there is more ethics, and more ethics from a theological stand-point, in Trinity than in other colleges.

We turn now to the other end of the scale of evolution, where the courses are almost wholly lecture courses, and are, either entirely or in the major part, elective; and in which, also, the instruction is mainly from the historical side. Of such institutions, Harvard and the University of Michigan are instances, perhaps the only ones. In the latter college, the only required study in this line is a course in either psychology (Murray) or logic (Jevons). Elective courses are, two in psychology, one in experimental and another in its relations to philosophic problems. The course in the history of philosophy is three hours a week through the year. This is supplemented by a three-hour course in the principles of philosophy, followed by a study of Hegel's 'Logic.' The courses under the general head of ethics would include a course in ethics, historical and theoretical; one in the philosophy of state and history; and a course each

in Plato's 'Republic' and Aristotle's 'Ethics,' occupying together two hours per week through the year. Other courses are, one in Spencer's 'First principles,' and one each in aesthetics and Kant's 'Critique of pure reason,' the latter two being omitted this year.

The Harvard courses include in the history of philosophy, English philosophy, from Locke to Hume; French, from Descartes to Leibnitz; and German, from Kant to Hegel; and one each in German philosophy of the present day and Hegel's 'Phaenomenologie,' which are omitted the present year. Psychology and logic (Bain and Jevons) are covered in one course; there is also an advanced course in experimental psychology. There is a course in the philosophy of nature, discussing Spinoza and Spencer. There are also five courses in ethics and philosophy of religion, comprehending one on philosophy in relation to ethics and religion (Royce's 'Religious aspects of philosophy'); one on philosophy of religion; another on philosophic theism; one on historical ethics, including especially, it appears, Mill and Kant; and one on practical ethics of modern society. The account would be incomplete if we failed to notice Professor Goodwin's courses in Plato's 'Republic,' and in the history of philosophy before Aristotle, with Professor Greenough's course on later Greek philosophy. All of these courses are elective. It will be noticed that there are about the same number of courses given in both the two last-mentioned universities, but the courses appear to cover more hours per year at Harvard than at Michigan.

Intermediate between the two classes of colleges discussed, come, in the east, Yale and Princeton; in the west, the universities of Wisconsin and California. At Princeton there are required courses in psychology, logic, ethics, and Christian evidences; elective courses in physiological psychology, metaphysics, history of philosophy, and science of religion; and graduate courses in Plato's 'Philosophy,' and one hour per week of discussion of philosophic problems. At Yale almost the only required studies in the senior year are the philosophic courses. The required studies are as follows: logic, psychology, ethics, natural theology, and evidences of Christianity; the electives are, the history of philosophy, two hours through the year; a course in Locke and Berkeley for two hours first half-year, followed by 'special topics' the second half; and a two-hour course in physiological psychology through the year.

The list of colleges given might be considerably increased; but it suffices, I think, to justify the division of colleges, so far as their philosophic teaching is concerned, into three classes, of which the first would include by far the greater number of institutions. Did space permit, it would be interesting to give the courses in two or three of the best Canadian colleges. The practice there is to divide the subjects into 'pass' and 'honor' subjects; the former being psychology, logic, and ethics, and the latter including quite a wide range. At McGill, for instance, besides courses in the history of ancient and modern philosophy, the student must pass an examination on twelve masterpieces; for example, Aristotle's 'Ethics,' Descartes' 'Method and meditations,' Spinoza's 'Ethics,' Fraser's 'Berkeley,' Spencer's 'First principles,' etc. At University college, Toronto, this honor-work requires such solid reading as Green's 'Introduction to Hume,' and his 'Prolegomena to ethics.'

For the most part, these courses speak for themselves to one familiar with the courses in German universities, or even in Great Britain in the present renaissance of philosophy there. The greatest lack is undoubtedly in the department of the philosophy of nature. The philosophic interpretation and criticism of the principles of modern science seem to be unknown save at Harvard and the University of Michigan. The greatest advance which any one familiar with the philosophic announcements of the last eight or ten years will notice is the growing tendency to introduce the history of philosophy, and especially the study of the originals, particularly in Plato, Aristotle, Kant, and even Hegel. A striking and welcome phenomenon is the increasing disuse of Sir William Hamilton. I do not say this with especial reference to his philosophy, but because it is safe to say that the sole ideas which the vast majority of graduates of our colleges have of continental philosophy, have come, directly or indirectly, through Hamilton and Cousin; and it is difficult to say which is the more misleading as an authority in historic philosophy. Princeton presents one innovation, whence, I think, almost all of our colleges could learn something. It has called in men from its biological department to discuss physiological psychology. The discussion of the one subject of visual sensation and perception could easily be made remarkably fruitful for psychology, as well as leading up to the subject of space-perception in general, and the question of empiricism and intuitionalism, and the function of evolution in psychical life. It is no discredit to our teachers of philosophy to say that it is almost impossible that they should have special knowledge in physiological psychology. The instructor of to-day has now, in the subject of logic, psychology, ethics, the history of philosophy, and what is vaguely called 'metaphysics,' to cover a wider field than the

teacher of any other branch ; and restriction of subjects rather than their enlargement is the need.

It is impossible to discuss the subject of the future of philosophy-teaching in this country without reference to the mooted question of 'electives.' It is evident that the great majority of those American colleges that have not introduced the elective system are giving all the time to philosophic studies possible, though I do not undertake to say whether or not that time be distributed in the wisest way. In fact, the outside scoffer would probably say that relatively too much time is given them, when all studies are required. It will be noticed that the colleges where least philosophy is required are the ones where most is taught, and the ground is most widely covered. Personally, I should not be surprised to know that they are the ones where most vital interest is taken in these studies, save in the instances, happily many, of the smaller colleges, where the philosophic teaching is in the hands of a man of such strong character that the teaching is a lasting power for life in an ethical way, whatever may be said of the strictly technical value of the philosophy taught. JOHN DEWEY.

INSECTIVOROUS PLANTS.

THE peculiar insect-capturing habits of certain of our native plants were observed nearly a century ago, and the belief was then entertained that the peculiar phenomena served some direct object in the plants' economy ; in other words, that the captured insects served as nutritive material. These observations, however, were long forgotten, or received but little attention, till, in 1875, Darwin's well-known work on insectivorous plants appeared. Since then a very great impetus has been received by botanists in their study, that has resulted in large additions to the literature of the subject. In a recent paper by the well-known botanist of Jena, Prof. W. Detmers (*Nord und süd*, 1886, 72, 81), a review of our present knowledge is given, from which the following is obtained.

At present it is well known that the function of the green tissue is the absorption of carbonic acid from the surrounding medium under the influence of light, and its decomposition and formation therefrom of organic compounds. Most of the higher plants are capable of complete and perfect development solely by the aid of purely inorganic materials, though in the larger number organic matter may and does form a share of the nutritive material. In the economy of nature this function is a most important one, as plants thus occupy an intermediate position between the animal and inorganic kingdoms.

But some plants are not thus provided with the green or chlorophyl tissue, and are dependent more or less upon organic foods. In some, as the mildews, the power of transforming inorganic to organic substances is wholly wanting ; while in others, as, for instance, certain orchids, such as Neottia nidus avus, the power is much restricted. Likewise the mistletoe, though sufficiently rich in chlorophyl, derives much of its material from the sap of trees upon which it is parasitic. Insectivorous plants, in the same way, seem to occupy an intermediate position between those dependent entirely upon inorganic and those which derive their material purely from organic sources.

The term 'insectivorous,' as applied to plants, is, however, not strictly correct, nor would 'carnivorous' be much better. Different forms of animal life are captured by such plants as have received this appellation, and by the aid of secreted juices are digested and absorbed ; but there is no mechanical action except in capturing and holding the objects, and therefore 'flesh-digesting' would express more correctly the process.

One of the best known of insectivorous plants is the 'sundew' plant (Drosera), species of which are distributed over nearly the whole world. It is small and low, growing about meadowy places, and conspicuous for the sparkling drops of fluid substance that are seen upon its leaves. The leaves, which are about four millimetres in diameter, have upon their upper surface a large number of peculiar tentacle-like organs, as many as two hundred in some cases. The ones in the middle are shorter and upright ; those near the sides, longer and more horizontal. Each tentacle consists of a stem, permeated by a spiral tube, and a glandular head, which emits a drop of colorless, sticky, and stringy fluid. This substance apparently serves to attract insects as well as to retain them when once they have alighted upon the leaf, as it is seldom that they are able to extricate themselves after coming in contact with it. To yet further assure this retention, the leaves possess the power of closing or folding together, brought about slowly by the irritation conveyed through the tentacles. An insect thus firmly enclosed remains till the fluids secreted by the tentacular glands have caused its solution, or, more properly, digestion. Any foreign object, be it mineral or animal, will cause the closure of the leaf and the secretion of fluids ; but there is this remarkable difference, — a mineral substance only produces the flow of an acid secretion, while an insect or piece of flesh causes, in addition, a