We must then conclude that, for reasons sufficient to themselves, the former occupants of the Champlain Valley did not fashion many of their implements or ornaments from the bones of the animals which they captured, although we must admit that the few specimens found do not fairly represent the entire stock of such objects which were made and used.

After collecting in this region for more than fifteen years without seeing a single specimen of worked bone, the first one made its appearance near an old village-site, while I was digging out some bits of pottery from beneath a pine stump. It was only a tine of a deer's antler, the surface of which had been smoothed, and a rudely cut groove was about the large end, as if to enable the owner to fasten a cord for suspending the object as an

FIG. 1.

ornament. So little-wrought a specimen would attract little attention usually, but it was taken associated with stone implements, from beneath a pine stump, and was our first of its kind, and therefore possessed especial value. It is white and somewhat chalky in appearance; but I do not suppose it to be necessarily of great age, though not very recent. This specimen is about four inches long and three-fourths of an inch in diameter at the larger end. A second and shorter tine was recently found in another locality. The point of this is smoothed, and it may have been used in the decoration of the pottery which was so commonly used, and which was most frequently ornamented with lines, grooves, and the like, made by a more or less blunt point drawn across the unbaked surface of the jars. The most perfectly made and finished point found in Vermont is shown full-size in Fig. 1. It is made from a fragment of a tibia, or some other round bone, and nearly the whole surface,

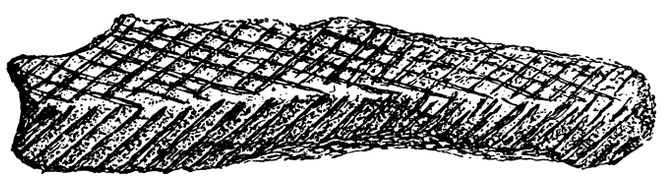

FIG. 2.

except the groove of the medullary canal, is well smoothed, and the pointed end is exceedingly well finished. This specimen was found not far from Burlington, and with it were fragments of bones, a canine of a bear, as well as stone implements. From the simple unornamented objects, such as those just mentioned, to such as that shown in Fig. 2. is a long step, but we have nothing intermediate. The specimen shown in Fig. 2 is, as the figure shows, broken along the upper and lower edge. Whether it originally was made from an entire section of a round bone, or was merely a fragment as we have it, is not readily determined. If fractured since it was ornamented, the breaking is not recent. It may have been a whistle, or tube for some other use.

As to the decoration, a glance at the figure will give a better idea of that than any description. The lines are sharply incised and quite regular, although the tool by which they were made now and then went a little astray, and the whole effect is very neat. The ends are smooth and somewhat bevelled or rounded. The length of this specimen is a little less than three and a half inches, and the greatest width three-fourths of an inch. It was found near Swanton, not far from the Canada border.

Another, and, if genuine Indian work, very interesting specimen is a mask made from a piece of a femur or some thick bone. The face is boldly and not unskilfully carved, the features all of them being strongly marked. It was found buried in the earth, not far from the specimen figured above, near Canada, and may quite possibly be the work of a passing hunter or soldier; and it is also, and perhaps equally, possible that it was carved by one of the St. Francis Indians, who formerly roamed about the region where it was found. It is apparently not very ancient. The face is oval, an inch and three-eighths long, and one and one-eighth wide, and, including the rather prominent nose, five-eighths of an inch thick.

The list here given is certainly very meagre, but it includes all kinds that have been found, and its brevity simply emphasizes the rarity of such objects in Vermont.

ON THE INTROSPECTIVE STUDY OF FEELING.

BY HIRAM M. STANLEY, LAKE FOREST UNIVERSITY, ILL.

OF all the sciences psychology is, perhaps, the most imperfect. If a science is a body of knowledge obtained by special research and accepted by the general *consensus* of specialists, then psychology is so defective as to scarcely merit the name of science. This want of *consensus* is everywhere apparent and must especially impress any one who compares the lack of harmony in manuals of psychology with the practical unanimity in manuals of botany, geology, physics, and other sciences. Even in the most fundamental points there is no agreement, as will be evident in a most summary statement.

It is now something more than a century since the general division of psychic phenomena into intellect, feeling, and will, first came into repute, but still some psychologists of note do not agree to this fundamental classification, but would unite feeling and will in a single order. As to the subdivisions of feeling and will we are confessedly wholly at sea. In intellect it is only on the lower side, sensation and perception, that anything of great scientific value has been accomplished; and even now it cannot be said that the classes of sensation have been marked off with perfect certainty. In the higher range of intellect psychology can do scarcely more than accept some ready-made divisions from common observation and logic. And if so little has been settled in the comparatively simple work of a descriptive classification of the facts of mind we may be assured that still less has been accomplished toward a scientific *consensus* for the laws of mind. Weber's law alone seems to stand on any secure basis of experiment, but its range and meaning are still far from being determined. Even the laws of the association of ideas are still the subjects of endless controversy. Also in method there is manifestly the greatest disagreement. The physiological and introspective schools each magnify their own methods sometimes so far as to discredit all others. Physiological method has won for itself a certain standing, indeed, but just what are its limitations is still far from being settled.

But the grievous lack of generally accepted results is most apparent in the domain of feeling. The discussion of feeling in most manuals is very meagre and unsatisfactory. Professor James's recent treatise, for instance, gives some 900 pages to the Intellect, and about 100 pages each to Feeling and Will. There is little thorough analysis and no perfected inductive classification. We often, indeed, find essays of literary value which appeal to the authority of literature. But to refer to Shakespeare or Goethe as psychological authorities or in illustration or proof of psychological laws is generally a doubtful procedure. The literary and artistic treatment of human nature is quite distinct from the scientific, and literature and art cannot be said to be of much more value for psychology than for physics, chemistry, or biology. To appeal to the Bible or Shakespeare in matters psychological,

is usually as misleading as to consult them for light on geology or botany. Even the fuller treatises on the subject of feeling rarely reach beyond literary method and common observation, being for the most part a collection and arrangement of the results of common sense, accepting common definitions, terms, and classifications. Now, science is always more than common sense and common perception, it is uncommon sense; it is an insight and a prolonged special investigation which penetrates beneath the surface of things and shows them in those inner and deeper relations which are entirely hid from general observation. Common views in psychology are likely to be as untrustworthy as in physics or astronomy, or any other department. Science must, indeed, start with common sense but it does not deserve the name of science till it gets beyond it.

Again, the subject of pleasure, pain, and emotion, is usually discussed with considerable ethical or philosophical bias. The whole subject of feeling has been so naturally associated with ethics and philosophy from the earliest period of Greek thought that a purely colorless scientific treatment is quite difficult. Furthermore, feeling has been too often discussed from an *a priori* point of view, as in the rigid following out of the Herbartian theory of feeling as connected with hindrance or furtherance of representation. Still further, the physical side of emotion has been so emphasized by the physiological school as to distract attention from purely psychological investigation. How far this may lead is seen in Professor James's theory of emotion which makes it the reflex of the so-called expression.

It is obvious, then, on the most cursory review that very little has been accomplished in the pure psychology of feeling. Here is a region almost unexplored, and which, by reason of the elusiveness and obscurity of the phenomena has seemed to some quite unexplorable. Dr. Nahlowsky truly remarks, that feeling is a "strange mysterious world, and the entrance to it is dark as to Hades of old." Is there any way out of this darkness and confusion? If the study of feeling is to become scientific and give assured results, we must, I think, assume that all feeling is a biological function governed by the general laws of life and subject in origin and development to the law of struggle for existence. Assuming this strictly scientific point of view we have to point out some difficulties in the way of the introspective psychology of feeling as compared with other departments of biological science.

We trace directly and with comparative ease any physical organ and function from its simplest to its most complex form; for example, in the circulation of the blood there is clearly observable a connected series from the most elementary to the most specialized heart as developed through the principle of serviceability. In some cases, as in the orohippus, a form in the evolution of the horse, we are able to predict an intermediate organism. Psychology is still far from this deductive stage; we have no analogous series of psychic forms, much less are able to supply, *a priori*, the gaps in a series. The reason for this is mainly the inevitable automorphism of psychological method. In biology we are not driven to understand life solely through analogy with our own life, but in psychology mind in general must be interpreted through the self-observation of the human mind. In biology we see without effort facts and forms of life most diverse from our own; the most strange and primitive types are as readily discernible as the most familiar and advanced, the most simple as the most complex. We study a fish just as readily as a human body, but the fish's mind — if it has any — seems beyond our ken, at least is not susceptible of direct study, but a matter for doubtful inference and speculation. Whether a given action does or does not indicate consciousness, and what kind of consciousness, this is most difficult to determine. Thus we have the most various interpretations, some, as Clifford, even going so far as to make psychic phenomena universal in matter, others, on the other hand, as Descartes, limiting them to man alone.

The difficulty of this subjective method, this reflex investigation, is almost insurmountable. Consciousness must act as both revealer and revealed, must be a light which enlightens itself. A fact of consciousness to be known must not simply exist like a physical fact or object, as a piece of stone, but it must be such that the observing consciousness realizes or re-enacts it. To know the fact we must have the fact, we must *be* what we *know*. Mind is pure activity, we do not see an organ and ask what it is for, what does it do; but we are immediately conscious of consciousness as activity, and not as an objective organ. We must here then reverse the general order and know the activity before we can identify the organ as a physical basis.

By the purely objective vision of the lower sciences we can easily determine a genetic series of forms most remote from our own life, but in psychology, mind can be for us only what mind is in us. The primitive types of psychosis are, no doubt, as remote and foreign from our own as is the primitive type of heart or nervous system from that of man's In the case of heart and nerve we can objectively trace with certainty the successive steps, but in endeavoring to realize by subjective method the evolution of mind we are involved in great doubt and perplexity. How can we understand an insect's feelings? How can we appreciate minds which are without apprehension of object, though there is reason to believe such minds exist? Only to a very limited extent can a trained and sympathetic mind project itself back into some of its immediately antecedent stages. Consciousness, because of its self directive and self-reflective power, is the most elastic of functions, yet it can never attain the power of realizing all its previous stages. Sometimes, however, the mind in perfect quiescence tends to relapse into primitive modes, which may afterward be noted by reflection, but such occasions are comparatively rare. The subjective method means a commonalty of experience which is often impossible to attain. Thus a man may believe there are feelings of maternity; he has observed the expression of nursing mothers, and knows in a general way that here is a peculiar psychosis into which he can never enter, and which is, therefore, beyond his scientific analysis. The psychic life of the child is more akin to his than that of the mother; yet it is only by an incessant cultivation of receptivity and repression of adult propensities that one can ever attain any true inkling of infant experience. There is then, I think, a vast range of psychic life which must forever lie wholly hidden from us either as infinitely below or infinitely above us; there is also an immense realm where we can only doubtfully infer the presence of some form of consciousness without being able to discriminate its quality, or in exceptional cases to know it very partially; and there is but a relatively small sphere where scientific results of any large value may be expected. By reason of its objective method the realm of physical science is practically illimitable, but psychic science is by reason of its subjective method kept forever within narrow boundaries.

We must then take into account the inherent difficulties of the subjective method as applied to the study of feeling and mind in general and yet we must recognize its necessity. No amount of objective physiological research can tell us anything about the real nature of a feeling, or can discover new feelings. Granting that neural processes are at the basis of all feelings as of all mental activities, we can infer nothing from the physiological activity as to the nature of the psychic process. It is only such feelings and elements as we have already discovered and analyzed by introspection that can be correlated with a physical process. Nor can we gain much light even if we suppose — which is granting a good deal in our present state of knowledge — that there exists a general analogy between nerve growth and activity, and mental operations. If relating, i. e., cognition, is established on basis of inter-relation in brain tissue, if every mental connecting means a connecting of brain fibres, we might, indeed, determine the number of thoughts but we could not tell what the thoughts were. So if mental disturbance always means bodily disturbance, we can still tell nothing more about the nature of each emotion than we knew before. We must first know fear, anger, etc., as experiences in consciousness before we can correlate them with corporeal acts.

Is now this necessarily subjective method peculiarly limited as to feeling? Can we know feeling directly as psychic act or only indirectly through accompaniments? Mr. James Ward (*vide.* article on Psychology in the Encyclopædia Britannica, p. 49 cf. p. 71) remarks that feelings cannot be known as objects of direct

reflection, we can only know *of* them by their effects on the chain of presentation. The reason for this is that feeling is not presentation, and "what is not presented cannot be re-presented." "How can that which was not originally a cognition become such by being reproduced?"

It cannot. But do we need to identify the known with knowing, in order that it may be known? Must feeling be made into a cognition to be cognized? It is obvious enough that no feeling can be revived into a re-presentation of itself, but no more can any cognition or any mental activity. Revival or recurrence of consciousness can never constitute consciousness of consciousness which is an order apart. If cognition is only presentation and re-presentation of objects, we can never attain any apprehension of consciousness, any cognition of a cognition or of a feeling or of a volition, for they are all equally in this sense subjective acts. Re presentation at any degree is never by itself sense of re-presentation or knowledge of the presentation.

Of course, the doctrine of relativity applies to introspection as to all cognition, and subject *qua* subject is as unknowable as object *qua* object. We do not know feeling in itself, nor anything else in itself, the subjective like the objective *ding an sich* is beyond our ken. Yet kinds of consciousness are as directly apprehended and discriminated as kinds of things, but the knowing is, as such, distinct from the known even when knowing is known. Here the act knowing is not the act known and is different in value. The object known is not, at least from the purely psychological point of view, ever to be confounded with the knowing, to be incorporated into cognition by virtue of being cognized. Feeling, then, seems to be as directly known by introspection and reflection as any other process. It is not a hypothetical cause brought in by the intellect to explain certain mental phenomena, but it is as distinctly and directly apprehended as cognition or volition.

The distinction between having a feeling and knowing a feeling is a very real one, though common phraseology confuses them. We say of a brave man, he never knew fear; by which we mean he never feared, never experienced fear, and not that he was ignorant of fear. Again, in like manner, we say sometimes of a very healthy person, he never knew what pain was, meaning he never felt pain. These expressions convey a truth in that they emphasize that necessity of experience in the exercise of the subjective method upon which we have already commented, but still they obscure a distinction which must be apparent to scientific analysis. We cannot know feeling except through realization, yet the knowing is not the realization. Being aware of the pain and the feeling pain are distinct acts of consciousness. All feeling, pain and pleasure, is direct consciousness, but knowledge of it is reflex, is consciousness of consciousness. The cognition of the pain as an object, a fact of consciousness, is surely a distinct act from the pain in consciousness, from the fact itself. The pain disturbance is one thing and the introspective act by which it is cognized quite another.

These two acts are not always associated though they are commonly regarded as inseparable. It is a common postulate that if you have a pain you will know it, or notice it. If we feel pained we will always know it. This seemingly true statement comes of a confounding of terms. If I have a pain I must, indeed, be aware of it, know it. in the sense that it must be in consciousness; but this makes, aware of pain, and knowing pain, such very general phrases as to equal experience of pain or having pain. But there is no knowledge in pain itself, nor pain in the knowing act *per se*. The knowing the pain must be different from the pain itself, and is not always a necessary sequent. We may experience pain without cognizing it as such. When drowsy in bed I may feel pain of my foot being "asleep," but not know it as a mental fact. We may believe, indeed, that pain often rises and subsides in consciousness without our being cognizant of it, but, of course, in the nature of the case there is no direct proof, for proof implies cognizance of fact. Pain as mental fact, an object for consciousness, not an experience in consciousness, is what is properly meant by knowing pain. Consciousness-of-pain as knowledge of it is not always involved by pain-in-consciousness as experience of it. Consciousness of pain by its double meaning as cognizance of pain and experience of pain leads easily to obscurity of thought upon this subject. But experience does not, if we may trust the general law of evolution from simple to complex, at the first contain consciousness of experience. This latter element is but gradually built up into experience, though in the end they are so permanently united in developed ego life that it is difficult to perceive their distinctness and independence.

We conclude then that while not all feelings, that is, pains and pleasures, are discovered simply by virtue of being acts of consciousness, and that not all consciousness is apperceptive of itself, yet in general feelings are known as such, and there is nothing in their nature to make them only indirectly observable by consciousness. The direct subjective method certainly presents great difficulties especially in evolutionary psychology, but still it must be accounted the only method for feeling as for all regions of psychic life.[1]

REMARKS ON AMERICAN LICHENOLOGY. — II.

BY W. W. CALKINS.

IN the *Lichens* the geographical distribution of species is quite as interesting as in phænogamia. I shall in this paper confine myself to observations and collections made in the sub-tropical section of our country. The tracing of species to their native habitats, and thence following them over often wide areas of dispersion until arrested in their progress by conditions unsuitable to their growth, is an important work for the botanist and for science. Florida — more especially its southern extremity — offers an attractive field and unusual advantages. One may draw a line east and west across the State in about latitude 25°, and below this will be found new conditions of soil, climate, and productions. A new and peculiar flora exuberant in growth will come into view. With both shores laved by the warm waters of the Gulf Stream, that "river in the ocean," also the Bahamas and Cuba less than one hundred miles distant, the reasons for the similarity of life to that of the Antillean system are plain. One has only to wander along these sunny shores and gather by bushels the proofs of what I say in such species as *Guilandina*, *Bonduc*, *Mucuna*, *Urens*, etc., that have been brought by the sea from other climes.

Then tropical Algæ claim the attention. Approximately the line I have mentioned represents two vast and dissimilar floras, each overstepping somewhat the territory of the other, but retaining the mastery in their respective fields. Here northern forms become intruders, southern less common. Many arborescent ones dwindle to shrubs. *Per contra*, further north the same law obtains. Thus hath nature set her limits. Standing on this borderland, and amazed at the change in the higher orders, I wished to know about the lower. In this field not much has been done. Our knowledge of the lichens has been until recently limited. It is my purpose to extend this knowledge somewhat, believing that it may be useful.

Most of the species described by Nylander and Tuckerman, as from Cuba and some from further south, will be found in Florida. The great order *Graphidacei*, one of the most perplexing, abounds in new species, and I am satisfied that further research will add to the number in this and other orders. I now make nearly four hundred and fifty species, which is indeed a great number for one section when we remember that only a few years ago Willey estimated that ultimately one thousand might be found on the entire continent. The final total in Florida will exceed five hundred; and I allow for some reductions which must follow their final resolution, for, as hinted in a former paper, this is more important than new species, especially if, as asserted, "species only exist in text-books,"— a proposition from which I dissent.

The following observations will only embrace a few of the rarer and little-known forms collected by me, and some others of my discovery described as new to science: *Gyalecta cubana* Nyl. On calciferous rocks, Keys of Florida, and on the main land Also in Cuba. Identified by Dr. Nylander. *Chiodecton sphærale* Nyl. A rare tropical form first found by me near Jacksonville — and

[1] For a special carrying out of the principles herein advocated see the writer's article on Primitive Consciousness in the Philosophical Review, July, 1892.