JOHN WESLEY POWELL.

V. THE INVESTIGATOR.

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[CONTINUED.]

THE second series of essays devoted to the subject of human evolution is based upon the five classes into which human activities are divided and upon the subdivision of these classes. The series is incomplete, but so far as it goes it traverses the ground of the essays of the preceding series, by treating of the evolution of individual activities from their lowest to their highest stages. The essays will be enumerated under their appropriate classes without reference to their order of publication, and it will be convenient to group with them certain papers falling outside the evolutional series but admitting of the same classification by activities.

Within the province of æsthetic arts are two papers. "Esthetology or the Science of Activities Designed to Give Pleasure" (*American Anthropologist*, 1899) develops a classification of the æsthetic arts and briefly outlines the evolution of each. "Evolution of Music from Dance to Symphony" (*A. A. A. S.*, 1889) traces the development of musical art from its origin with dancing by the successive addition of melody, harmony, and symphony.

In like manner an essay entitled "Technology, or the Science of Industries" (*American Anthropologist*, 1899) classifies the industrial arts, or those activities which conduce to welfare; but the lines of evolution in this field are only briefly indicated.

Under the head of institutions are to be classed four papers,—"Kinship and the Tribe," "Kinship and the Clan," "Tribal Marriage Law," and "Sociology or the Science of Institutions."

Tribal society is organised on a basis of kinship, but the system of kinship differs from that of civilisation. In a tribe the line

between generations is sharply drawn. Within a generation each man is brother to each other man, and this without reference to degrees of consanguinity. Such distinctions as we make by the word cousin are ignored. The generations stand in lineal order, and each male of one generation is accounted the son of each male of the preceding generation and the father of each male of the following generation. In this fundamental respect tribal kinship differs so widely from the kinship system of our community that it is not easy for us to conceive it; and in other respects it is equally strange. The three essays referred to describe tribal kinship, distinguish its two chief varieties, and explain the kinship system of the clans constituting a tribe, as well as the strange marriage systems which result from and serve to perpetuate the systems of kinship. (*Third Ann. Report Bureau of Ethnology*, 1883.)

Here also should be mentioned an address on the "Outlines of Sociology" (*Anthrop. Soc.*, 1882), in which the State is defined, its evolution is described, and its regulative functions are classified.

Three works fall under the head of language. The first is an "Introduction to the Study of Indian Languages" (1880), and is essentially a code of instructions for the collection of linguistic material. A code of instructions to observers is primarily an enumeration of the particulars as to which information is desired, or as to which it is expected that information can be obtained. These particulars are the categories of existing generalisations on the subject, together with those bearing on existing hypothesis. The full code of instructions for new observation thus embodies the results of all earlier observation, generalisation, and explanation. The language of a people, being invented for the communication of their thoughts, embodies in its vocabulary their arts, their institutions, and their philosophy; and an Indian language cannot be profitably studied unless the other activities of the tribe either are understood or are simultaneously studied. And so Powell's *Introduction* includes under its modest title a succinct compend of the generalisations of North American ethnology.

The second work under this head is an essay on the "Evolution of Language" (*First Annual Report Bureau of Ethnology*, 1881). Linguistic progress includes very little addition of new material, but consists chiefly of internal change. The processes of change are classed as Combination, or the union of two or more words for a new purpose, Vocal Mutation, Intonation, and Placement or the association of sense relations with the relative positions of words in a sentence. It is shown that the primitive languages differ from

the advanced in their imperfect discrimination of parts of speech, in their elaborate inflection, and in their lack of general terms. Progress is through the differentiation of the parts of speech and the substitution of general terms and separable qualifiers for inflected words. "Judged by these criteria, the English stands alone in the highest rank; but as a written language, in the way in which its alphabet is used, the English has but just emerged from a barbaric condition."

The remaining work is an essay on "Philology," which is considered as "the science of activities designed for expression" (*American Anthropologist*, 1900). The activities are classified as emotional, oral, gestural, written, and logistic languages, logistic language including notations, like the algebraic and musical, in which ideas are expressed directly by signs, without the necessary implication of words. The science of oral language is developed at some length.

Four addresses and essays were devoted to philosophies, or the systems of explanation of the phenomena of nature: the "Philosophy of the North American Indians" was read to the American Geographical Society in 1876, and "Mythologic Philosophy" to a section of the American Association for the Advancement of Science in 1879. The "Lessons of Folklore" and "Sophiology or the Science of Activities Designed to give Instruction" appeared in the *American Anthropologist* in 1900 and 1901. The first is chiefly descriptive. The second compares mythic explanations with scientific, discusses the successive stages of mythologic philosophy, and indicates the dependence on it of ancientism, spiritism, thaumaturgics, and religion. The third deals with the evolution of philosophies, by pointing out various survivals of primitive explanations in various classical and modern systems of philosophy. The fourth outlines the evolution of philosophies as an introduction to classification of the ways in which opinions are propagated. Perhaps a fifth paper should be added to this group, an essay on "The Evolution of Religion," contributed to *The Monist* in 1898. The following extracts are selected from the first and second essays:

"To fully present to you the condition of savagery, as illustrated in their philosophy, three obstacles appear. After all the years I have spent among the Indians in their mountain villages, I am not certain that I have sufficiently divorced myself from the thoughts and ways of civilisation to properly appreciate their childish beliefs. The second obstacle subsists in your own knowledge of the methods and powers of nature, and the ways of civilised so-

ciety; and when I attempt to tell you what an Indian thinks, I fear you will never fully forget what you know, and thus you will be led to give too deep a meaning to a savage explanation; or, on the other hand, contrasting an Indian concept with your own, the manifest absurdity will sound to you as an idle tale too simple to deserve mention, or too false to deserve credence. The third difficulty lies in the attempt to put savage thoughts into civilised language; our words are so full of meaning, carry with them so many great thoughts and collateral ideas. In English I say 'wind,' and you think of atmosphere in revolution with the earth, heated at the tropics and cooled at the poles, and set into great currents that are diverted from their courses in passing back and forth from tropical to polar regions; you think of ten thousand complicating conditions by which local currents are produced, and the word suggests all the lore of the Weather Bureau,—that great triumph of American science. But I say *neir* to a savage, and he thinks of a great monster, a breathing beast beyond the mountains of the west."[1]

"There are two grand stages of philosophy,—the mythologic and the scientific. In the first, all phenomena are explained by analogies derived from subjective human experiences; in the latter, phenomena are explained as orderly successions of events.

"In sublime egotism man first interprets the cosmos as an extension of himself; he classifies the phenomena of the outer world by their analogies with subjective phenomena; his measure of distance is his own pace, his measure of time his own sleep, for he says, 'It is a thousand paces to the great rock,' or 'It is a hundred sleeps to the great feast.' Noises are voices, powers are hands, movements are made afoot. By subjective examination discovering in himself will and design, and by inductive reason discovering will and design in his fellow men and in animals, he extends the induction to all the cosmos, and there discovers in all things will and design. All phenomena are supposed to be the acts of some one and that some one having will and purpose. In mythologic philosophy the phenomena of the outer physical world are supposed to be the acts of living, willing, designing personages. The simple are compared with and explained by the complex. In scientific philosophy, phenomena are supposed to be children of antecedent phenomena, and so far as science goes with its explanation they are thus interpreted. Man with the subjective phenomena gathered about him is studied from an objective point of view and the phenomena of subjective life are relegated to the categories

[1] *American Geog. Soc. Journal*, Vol. VIII., p. 253.

established in the classification of the phenomena of the outer world; thus the complex is studied by resolving it into its simple constituents."[1]

"In Shoshoni, the rainbow is a beautiful serpent that abrades the firmament of ice to give us snow and rain. In Norse, the rainbow is the bridge Bifrost spanning the space between heaven and earth. In the Iliad, the rainbow is the goddess Iris, the messenger of the King of Olympus. In Hebrew, the rainbow is the witness to a covenant. In science, the rainbow is an analysis of white light into its constituent colors by the refraction of raindrops."[2]

Powell's own philosophy, to the formulation of which he devoted several years, is published in *Truth and Error*, a volume which contains also a treatise on psychology. Had his full plan been carried out, *Truth and Error* would have been followed by two other books, the second bearing the title *Good and Evil.* The writing of the second book was completed—the last effective work of his life—and its chapters were printed as independent essays in the *American Anthropologist.* One of them, "The Categories," pertains to the field of general philosophy; the others have already been mentioned as treatises on human activities.

His only writing devoted largely to intellectual methods is an address to the Biological Society of Washington at its Darwin Memorial Meeting in 1882. Three groups of philosophies are here recognised, the mythologic, the metaphysic, and the scientific. It is shown that the method of metaphysics is formal logic, while the method of science consists of induction and hypothesis.

"Now the machine called logic, the tool of the metaphysician, is curiously constructed. Its chief hypothesis is that man was primitively endowed with fundamental principles as a basis of reasoning, and that these principles can be formulated. These fundamental principles are supposed to be universal, and to be everywhere accepted by mankind as self-evident propositions of the highest order, and of the broadest generalisation. These fundamental propositions were called *major* propositions. The machine, in formal logic, was a verbal juxtaposition of propositions with the major propositions at the head, followed by the minor propositions, and from this truth was supposed to flow.

"This formal logic of the Aristotelian epoch has lived from that period to the period of science. Logic is the instrument of metaphysics, and metaphysic philosophy, in its multifarious forms,

[1] *American Association Adv. Sci., Proc.*, Vol. XXVIII., pp. 253–254.

[2] *American Association Adv. Sci., Proc.*, Vol. XXVIII., p. 259.

is the product of logic. But during all that time—2,000 years—no truth has been discovered, no error has been detected, by the use of the logical machine. Its fundamental assumption is false.

"It has been discovered that man is not endowed with a body of major propositions. It is found that in the course of the evolution of mind minor propositions are discovered first, and major propositions are reached only by the combination of minor propositions; that always in the search for truth the minor proposition comes first, and that no major proposition can ever be accepted until the minor propositions included therein have been demonstrated.

"The error in the metaphysic philosophy was the assumption that the great truths were already known by mankind, and that by the proper use of the logical machine all minor truths could be discovered, and all errors eliminated from philosophy. As metaphysic methods of reasoning were wrong, metaphysic philosophies were false; the body of metaphysic philosophy is a phantasmagoria."[1]

Two important essays cannot be included under any of the above classes, as they discuss the material of all. They treat of the methods to be pursued in anthropologic research and the methods to be avoided, of the fruitful lines of inquiry and the barren, of the dangers from the use of superficial observations and of the dangers from faulty principles of interpretation. They are to a certain extent the codification of the counsel by which he has guided the work of his associates in the Bureau of Ethnology, and they are contained in the *Annual Reports* of the Bureau. One is on "Limitations to the Use of Certain Anthropologic Data," the other on "Activital Similarities."

"Here again [in sociology] North America presents a wide and interesting field to the investigator, for it has within its extent many distinct governments, and these governments, so far as investigations have been carried, are found to belong to a type more primitive than any of the feudalities from which the civilised nations of the earth sprang, as shown by concurrently recorded history.

"Yet in this history many facts have been discovered suggesting that feudalities themselves had an origin in something more primitive. In the study of the tribes of the world a multitude of sociologic institutions and customs have been discovered, and in reviewing the history of feudalities it is seen that many of their important elements are survivals from tribal society.

[1] *Biolog. Soc. Wash., Proc.*, Vol. I., p. 63.

"So important are these discoveries that all human history has to be rewritten, the whole philosophy of history reconstructed. Government does not begin in the ascendency of chieftains through prowess in war, but in the slow specialisation of executive functions from communal associations based on kinship. Deliberative assemblies do not start in councils gathered by chieftains, but councils precede chieftaincies. Law does not begin in contract, but is the development of custom. Land tenure does not begin in grants from the monarch or the feudal lord, but a system of tenure in common by gentes or tribes is developed into a system of tenure in severalty. Evolution in society has not been from militancy to industrialism, but from organisation based on kinship to organisation based on property, and alongside of the specialisations of the industries of peace the arts of war have been specialised.

"So, one by one, the theories of metaphysical writers on sociology are overthrown, and the facts of history are taking their place, and the philosophy of history is being erected out of materials accumulating by objective studies of mankind."[1]

The present chapter on Powell's scientific work and the following chapter on his administrative work were written about twelve years ago, at a time when he was at the head of the Geological Survey as well as the Bureau of Ethnology. In preparing them for publication at the present time, the writer has so far revised them that they cover the whole period of his literary and executive activity. But the following account of his literary style and literary habits, written at the zenith of his activity, is permitted to stand without change of tense or other qualification.

Powell's literary style is influenced in a curious and interesting manner by his philosophy. Science does not invent, but discovers; and that which has been discovered needs only to be published in order to become a part of the world's knowledge. It differs in this respect from metaphysics, which postulates its principles and then by the methods of formal logic undertakes to prove its results. In metaphysics demonstration is proving; in science demonstration is merely pointing out. So that all that is absolutely necessary to the presentation of a scientific result is its statement; if the result is worthy of acceptance, it will ultimately be received, for it will be found to accord invariably with the results of new observation. The absolute generality of a conclusion can be established only by comparing it with all the phenomena, and as this is impossible, such comparison as is made serves only to illustrate. The citation

[1] *First Annual Report Bureau of Ethnology*, 1881, p. 83.

of particular instances usually assists the comprehension of a general idea, and illustration is thus a useful adjunct to statement. Powell's philosophical writings thus consist of the statement of results, with a small amount of illustration, and in many instances without illustration. They are for the most part highly concise, and as they often lead the ordinary reader into novel realms of thought, much study is sometimes necessary to their full comprehension. On the other hand, some of his generalisations are so simple as compared to the theories or postulates which they supplant, and are so readily grasped, that they are accepted as axioms and not recognised as the results of laborious research and profound thought.

His style has been further influenced by the loss of his right hand, and by a remarkable power of controlling his attention. The loss of his hand in early manhood led him to depend to an exceptional degree on amanuenses. All of his scientific writings have been dictated to shorthand writers, and escaping thus the delay and the divided attention involved in the personal use of the pen, he has been able to select words with unusual care.

His power to control his attention is exemplified in the daily transaction of business at his official desk. The dictation of a letter or of an essay will be interrupted by a question from a subordinate or by a visitor, and as soon as the temporary business has been transacted the dictation is resumed at the point of leaving off without apparent effort. Through this remarkable power he is able to direct his attention to any selected subject of thought and there concentrate it for an indefinite period. The intellectual labor necessary to the arrangement of a subject for composition is performed without the aid of notes, and the entire subject is elaborated and stored in the mind before its record is begun. This elaboration extends to the division of the subject into distinct propositions and the arrangement of these propositions in a logical order. It does not ordinarily extend to the framing of sentences, but the ideas to be expressed have passed out of the haze of suggestion into the clear light of full perception before dictation is attempted. Thus in a second way it results that close attention is given to the selection of words and phrases and the framing of sentences. With many writers the employment of a shorthand amanuensis leads to a diffuse style, characterised by long and involved sentences, but in Powell's case such employment is coincident with a concise style and the prevalence of short sentences,—a difference which I conceive to be due to the fact that his subject is thought out in advance.

During the period of mental elaboration, while the subject is undergoing classification and arrangement, it is often rehearsed to friends in the guise of a topic of conversation; and while it is thus fully at command, it is apt to be drawn on as material for post-prandial speeches and other occasional and extempore remarks and especially for discussions in scientific societies. In such ways he tests in advance the reception of the results of his cogitation before committing them even to the private record of the written page. It has occasionally happened that the thoughts thus set afloat have received publication in the writings of others before they appeared in his own. Probably the appropriation has usually been unconscious, but whether so or not the matter is of little moment, for a mind fertile as Powell's need not be a stickler for priority of thought, and the world need not care from what source flow the ideas that constitute its progress.

During dictation his mental activity is correlated with a certain amount of muscular action, as is the case with many authors. Sometimes he sits in a pivoted chair, swinging it one way and another, and accompanying emphatic passages by gesture. More frequently he paces the floor, with a cigar, lighted or unlighted, in mouth or hand, raising his voice and gesturing with hand and body as though addressing an audience.

Despite the thoroughness of his mental preparation, the manuscript of a scientific article is rarely complete at first writing, but is in that stage criticised in all respects, from its verbiage to its general logic. It is brought under view from time to time for several days, and if possible for several weeks, and is again submitted to friends conversant with the subject for the purpose of eliciting discussion and criticism.

As a speaker Powell is deliberate and effective. When no manuscript has been prepared, he frames his sentences clearly and completely, and in the style characteristic of his essays. His voice is of moderate strength, but sufficient for the ordinary lyceum audience. Warmed to his subject, his gestures are frequent and withal spontaneous and unconscious. When he speaks in Washington, where he is well known, the audience room is always filled, and he is equally popular on various lecture circuits of the country. In the early years of his governmental work, when he expended his entire appropriation in exploration and drew no salary, he supported himself by lecturing, arranging for a tour whenever his finances demanded it.

As a debater he is peculiarly ready, not with repartee but with

ideas. Indeed the term "debate" ill applies to the discussions in which he ordinarily participates, for these are at the meetings of scientific societies, where the general object is the discovery of truth and not rhetorical victory. His remarks are especially characterised by the originality of their point of view, which usually rises above the special subject and presents some phase of his comprehensive philosophy.

He often attempts to illustrate what he says by marking with crayon on a blackboard, just as in conversation he frequently marks with pen or pencil on a sheet of paper, but such attempts serve only the purpose of gesture, correlating a certain amount of muscular activity with the mental activity of the moment. The lines he draws rarely bear any relation to the subject.

His hours of labor and hours of recreation and rest have little relation to official hours of business, and he pays small heed to the mandates of the sun. His executive duties indeed require his presence in certain places at certain times, but his scientific work has no fixed time. It recurs to his mind after each interruption, and holds his attention until the next. Recreation in the earlier years of his governmental work was given no regular place, although his life was far from devoid of it. It consisted chiefly of the conversation of friends and family, but included also games. He was fond of whist, euchre, and cribbage, being an expert at the last, and billiards was a favorite entertainment until a disease of the eye impaired his skill. He also drove much, being fond of horses and an expert reinsman, despite the loss of his right hand. These various recreations filled only hours of comparative leisure, and were relinquished for days and even weeks whenever his energies were specially demanded by a crisis of affairs or the formulation of a scientific subject. Of late years considerations of health have dictated regular exercise, and he has adopted the practice of spending some hours each day in the saddle. Multiplying responsibilities clamor for the remainder of his time, and other recreations are relinquished, unless indeed the social duties incident to his official position be regarded as recreations.

Comparatively few hours are demanded for sleep, and few are given. The hour of retiring is apt to be late, and it is a life-long habit not to linger in bed awake, but to rise on waking whatever the hour. On the other hand, the artificial termination of sleep is not tolerated when it can be avoided.

[TO BE CONTINUED.]