

SCIENCE

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GOVERNMENTAL SCIENCE AND THE CIVIL SERVICE.

THE visitor to Washington who has been acquainted with its life and appearance in the past notices many striking changes for the better that have taken place within the last ten years. Perhaps none of these make more lasting impressions on him than those which are brought about by the great alterations affecting the official life of the city, which are due to what are generically termed civil service reforms. The dweller in a Washington boarding-house or small hotel — and these are *sui generis* in the *personnel* of their inhabitants — sees far less of the feverish uncertainty, constant fear of the departmental headman, and hesitancy in claiming the possession of one's own soul, than was to be observed a decade ago. To the civil service acts passed by Congress since 1882, the promptness in putting their requirements into force shown by Presidents Cleveland and Harrison, and the efficiency of the commissioners having this branch of the public service in special charge, is to be attributed the present condition of this reform — for reform it undoubtedly is.

In their report for 1889 the commissioners say, "The merit system of making appointments to minor government positions, as contrasted with the patronage system, whereby appointments were made as rewards of personal or political services, is no longer in the merely experimental stage." What was true in 1889 must be doubly so in 1891. It is but fair, then, to point out wherein certain customs and rulings of the commissioners are still unjust to the entire people, and have a pernicious effect on important branches of the public service. The nature of these defects can best be pointed out after quoting further from the report of the commissioners. They say: "Examinations are held for scores of different places; and for each place appropriate tests are provided. Thus it is necessary for an assistant chemist to know something of chemistry, and for an assistant astronomer to know something of astronomy. . . . There is an impression abroad that those who take examinations at Washington have some advantage over those who take them elsewhere. There seem to be some good grounds for it with regard to the special examinations. This is probably due to the fact that very many of those who are examined here have better opportunities than those living elsewhere for acquiring a knowledge of those technical subjects which are required by the different departments."

As an illustration of how this may work, let me cite the following case. A few weeks ago a position was vacated in one of the divisions of the Agricultural Department, and announcement of the fact that an examination would soon be held for such a vacancy, requiring "a person understanding botany, Latin, and Greek," was made in the daily press of the city. This announcement, according to the custom of many local papers throughout the Union, found its way into the home of a trained botanist and linguist in one of our southern States. This he mailed at once to a friend with the request that he would ascertain for him when, where, and

how the proposed examination was to be held. Imagine this friend's surprise when, on application for this information at the office of the Civil Service Commission, he was informed that the position was already filled, the examination having been held two days before. Yet his correspondent, who lived less than a thousand miles from Washington, had written him at once on receipt of the announcement, and the local weekly paper could not have sooner inserted the information found in the dailies. Further conversation with the officer to whom he was referred at the office of the commission, and inquiry at the Department of Agriculture, elicited the following facts. If a vacancy is to be filled, the Civil Service Commission gives ten days notice of the special examination therefor. If a person living outside of Washington wants to be examined for the vacancy he must write to the commissioners, preferring his request, and a special examination will be held for him at some place designated by them, the capital of the State usually being the place selected. In this particular case the vacancy was undoubtedly creditably filled; though the appointment of the southern resident, who only heard of the vacancy the day that it was filled, would have shed far more lustre on the department, as he outranked in scholarly and scientific attainments most of those with whom he would have thus been brought in contact.

In the ordinary offices, such as those of clerks, copyists, stenographers, pension examiners, railway-mail clerks, letter carriers, etc., the applicants far outnumber the needs of those respective branches of the service, as is shown by the fact that, while in 1887 the entire number of offices under the custody of the commission was 28,000, they were called upon to examine over 20,000 applicants for the vacancies in those ranks. So it is the fact that in these grades the existing rules act admirably and tend to the continual elevation of the public service. But in such positions as those of examiners of the Patent Office, and technical and scientific experts in the various departments, the present system is very imperfect, inasmuch as it is hardly possible that any considerable portion of the scientific and technical skill of the country is in Washington seeking a position. Surely a very respectable majority of such talent must be in cities far removed from the national capital, and any system which practically rules out all the regions not within a few hours' ride of Washington is abortive, and degrading of the general standing of scientific officialdom.

If such positions as have been indicated are to be filled under the laws governing the Civil Service Commission, then the commissioners should at once put into force rules that would do away with this very evident local favoritism, and which would enable the practical geologist in southern California to compete on fair terms with the recently graduated youths from the Columbian and Johns Hopkins Universities. It is quite as practicable that printed announcements of such vacancies should be posted in every post office in the country as it is that they should receive the daily weather bulletins. And no examination should be held until the resident of the most remote corner of the West had had ample time to apply to the commission for a special ex-

amination in his locality, and such a local special examination should never be held in a more remote place than the county-seat of the county where the person to be examined resides. There can be no reason why the paper containing the examination questions may not be safely mailed to the postmaster, the seals not to be broken save in the presence of all of a board of three, to consist of the postmaster, a prominent professional man of the town, and a notary public. Before these the applicant could appear, and in their presence answer the questions sent to them. To the facts of the regularity of the examination they could swear, returning the affidavits and the applicant's answers to the commission. As these special examinations are infrequent, and the positions for which they are held are of considerable importance, and should be filled by the best men at the disposal of the government, no plea of extra expense, of unnecessary trouble, nor of danger of collusion should be heeded. The latter danger would be practically *nil*; it is inconceivable that three prominent men, not more than two of whom should be of the same political party, would jeopardize their positions and reputations in their communities by any form of collusion. If these positions are not worthy of this small extra outlay of time, patience, and cash by the commission, they are confessedly not worth filling at all. The present plan contributes to a degree of departmental degeneracy and the continued existence of certain hangers-on, the relics of the departing age of political preferment, which should no longer be tolerated. At present it is quite as likely to be the ne'er-do-well friend of some clerk in the bureau where the vacancy is about to occur, who, getting an early hint of the coming vacancy, rushes to one of the schools where cramming for these examinations is given special attention, as it is to be a trained expert from New England, the South, or the West.

These suggestions have been based on the supposition that the present laws selecting the offices that shall be open to the present of the commission will remain substantially as at present. The outsider, who feels only an interest in the improvement of official science as it is to be met in the capital, will be quite likely to agree with me that at present the examination regulations are attached to the wrong end of the machine. It is the heads of bureaus, and not the more obscure officials, whose offices should depend on these examinations. What matters it whether the stenographer of a bureau be an expert in his profession if the chief whom he is under dictates to him letters which plainly attest the fact that he is holding his position by virtue of political favoritism and has not yet become acquainted with the intricacies or the science of his office? So long as the head of a scientific division of a department may be chosen without reference to his eminent fitness for the discharge of his duties, it is but a pitiable farce that leads to such care being taken to provide him with competent men to transact work which he cannot direct and of which he is not a judge. If the chiefs were chosen after a searching examination into their position among their fellows in the science, the knowledge of which they were called upon to display, it might be found then that the government had thereby obtained the services of a class of men who could be trusted to choose their own underlings. I believe that this can be now said of most of these heads of divisions and bureaus, yet one is compelled to admit at times the justice of the slurs at the work done under these that the American must be prepared to hear from the lips of foreigners. There is undoubtedly yet a taint of cheapness and unworthy show about much of this work, for which the

half-pay salaries allowed by Congress and the imperfect system of examination now in vogue, as here indicated, are mainly responsible.

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INDICATIONS OF EVOLUTION IN LEAVES.

As evolution is the eternal plan of unfolding, in the past, from nebulous matter to plant and animal life, it is absurd to suppose the same principle of progression will not continue to produce changes in the whole realm of being in all time to come.

The investigator puts his finger on the long past geologic ages and says, "These forms are all that existed at this time:" then he points out the advance of later times, and says, "This is evolution." But how this almost infinite change has been brought about, even the imagination constructs no definite plan. It is only by studying the evolution of the present that we can appreciate the changes of the past. To say that things are unchangeable is to ignore the truths of evolution. There is an ever on flowing, rising tide which bears all things on its bosom, unfolding higher conditions, and, as a result, more perfect forms and qualities.

The leaves of plants offer to the evolutionist perhaps one of the best opportunities for studying the principle of progression actually at work; producing changes in the forms of leaves, their mode of individualization, and numerical increase.

My attention was first attracted to the interesting study of variation in leaves by the *Ampelopsis quinquefolia*. As its name implies, it has five leaflets. Close observation, however, discerned leaves bearing seven leaflets. Sometimes the two lower leaflets were more or less notched or deeply lobed; continued search revealed various degrees of variation, from three to seven leaflets. These specimens were considered "abnormal," "freaks of nature," or "monstrosities,"—interesting because unusual. I soon observed that the *Ampelopsis* was not alone in its manifest variation from typical forms. On the contrary, plants quite commonly exhibit the same tendency. *Rubus villosus* is especially conspicuous in this respect. It has commonly from three to five leaflets, but very often the trifoliate leaves are notched and lobed as in the *Ampelopsis*.

Could it be that these different forms, these variations from the common type, were evidences of evolution in leaves? Can a series of leaves be found illustrating successive stages of variation, was the query which arose in my mind. The leaves of *Ampelopsis quinquefolia* were again examined, in all the neighboring region. They had given rise to the query, and should therefore have the first opportunity of rendering a verdict. As the search continued, these odd forms, these "monstrosities," seemed to arrange themselves in regular order, like crystals marching into line. Instead of being "freaks of nature," they now stood like many ballots in favor of evolution.

Starting with the ordinary leaf of *Ampelopsis quinquefolia*, numbering five leaves, the progressive stages, until it numbers seven, were found repeatedly, perhaps a hundred specimens, from a single vine of luxuriant growth.

The first transition step apparently seemed to be but a slight enlargement or fulness on the lower or outer portion of the leaflets near the base; this fulness increases until quite a conspicuous bulge is formed. A slight notch may be next observed, which deepens as the series progresses until the lobe is cut entirely from the leaflet, becoming itself a new, perfectly formed leaflet. A prominent vein is found extend-