

thus fixed, he cannot be disturbed in possession by the landlord, except on the payment of a fine known as 'compensation for disturbance.' The tenant may sell his tenant-right to another, who has then all the privileges as against the landlord which the original tenant enjoyed. In this way are secured the three 'F's,'—Fair rents, Fixity of tenure, and Free sale. In this way, also, the landlord is almost completely deprived of any real control of his property.

The act has not been, by any means, a dead letter. Eighty-five sub-commissioners were, in 1883, engaged in the work of determining 'fair rents,' and the number was afterwards somewhat increased. As a result a general reduction in rent was effected, amounting on the average to about twenty per cent, and in some cases to thirty per cent and upwards. This virtually amounts to a confiscation of from one-fifth to one-third of the capitalized value of landed estates in Ireland. Its moral effect may lead to a still further reduction in value: for who can be sure that a government which has confiscated one-fifth of the estate will not subsequently confiscate it all if peace and quietness not follow as a result of the present measure?

Both acts above mentioned contained provisions intended to favor the growth of a class of peasant proprietors. The purchase of holdings by tenants in the case of estates which fell under the jurisdiction of the encumbered estates court, was favored by the authority given to the Irish board of works, in 1870, to advance two-thirds (increased in 1881 to three-fourths) of the purchase-money at three and a half per cent interest, to be repaid at intervals during a period of thirty-five years. It has already been proposed to extend this authority so as to let them advance all the purchase-money at a lower rate of interest, for a longer time.

He would be a bold man indeed who would assert that these acts, sweeping as they are, constitute any real contribution to the actual solution of the Irish problem. Such a statement could only be made by one who had a political point to gain, or who had given but little attention to the actual investigation, even at second hand, of the social and economic conditions which prevail over a large part of Ireland. The difficulty lies deeper than any mere landlordism, and it will not be long until the Irish land question will be again to the front, and that, too, whether Ireland be under English or Irish rule.

These acts, however, mark a new era in English legislation on this subject. They indicate (and herein lies the hopeful feature of the case) that the English people are now ready to take up this and similar questions in earnest. They are now

willing to throw to the winds all doctrinaire theories of *laissez-faireism*, to disregard alarmist speeches about approaching communism or socialism, and to close their ears to the old song about the supreme sacredness of private property. They are now determined, after getting all the light they possibly can from economic and historical science, to make use of the only means which promises any solution whatever, viz., that of actual experimentation. The outcome of the recent experiments in Ireland, to which the late acts have been practically limited, will afford great assistance in the solution of the Scottish and English land questions, which must soon come to the front.

E. J. JAMES.

### THE BLACKFOOT TRIBES.

At the late meeting of the British association for the advancement of science, a committee of the anthropological section presented a report (prepared by Mr. Horatio Hale) on the tribes of the noted Blackfoot confederacy. The report comprises many particulars relating to the origin and history of the tribes, the character of the people, their mythology, languages, and mode of government, and their present condition. The facts have been mostly derived from correspondence with missionaries now residing among the people, and from official documents, with some memoranda made by the author of the report during an exploring tour in Oregon. Only a brief abstract of the information thus brought together can here be given.

The tribes composing the confederacy are, or rather were, five in number. Three of these, forming the nucleus of the whole body, are the original Blackfoot tribes, who speak the same language, and regard themselves as descended from three brothers. These are the Siksika, or Blackfeet proper; the Kena, or Blood Indians; and the Piekané, or Piegans (pronounced Peegans),—a name which is sometimes corrupted to 'Pagan Indians.' To these were added, when the confederacy was at the height of its power, two other tribes,—the Sarcees, who joined them from the north; and the Atsinas, who came under their protection from the south. The Sarcees are a branch of the great Athabascan or Tinneh family, which is spread over the northern portion of the continent, in contact with the Eskimo. The Atsinas, otherwise known as Fall Indians and Gros Ventres, are shown by their language to be akin to the Arapohoes, who once wandered over the Missouri plains, but are now settled on a reservation in the Indian Territory.

The dividing line between the United States and

Canada has cut the confederacy in two. Most of the Piegiens, with the few surviving Atsinas, reside on the American side, where a large reservation has been set apart for them, along the head waters of the Missouri River. The residue of the Piegiens, with the Siksika, Kena, and Sarcee bands, dwell on reserves laid off for them near the southern boundary of the Canadian north-west territories, adjacent to the Rocky Mountains. Thus the lands occupied by these tribes, though much diminished in extent, are in the same region which they held fifty years ago, when their confederacy was the dominant power among all the Indians west of the Mississippi. At that period their numbers were reckoned at thirty thousand souls. Various causes, but more especially the ravages of the small-pox, have greatly reduced them. The population of the four Canadian reserves is computed at about 6,500, divided as follows: Blackfeet (Siksika), 2,400; Bloods (Kena), 2,800; Piegiens (Piekanè), 800; Sarcees, 500. On the American reservation there are stated to be about 2,300, mostly Piegiens, with some Sarcees. This would bring up the total number of Indians in these tribes to nearly 9,000 souls.

The country inhabited by the Blackfeet was the favorite resort of the buffalo. The vast herds which roamed the plains, or found shelter during the winter in the woody recesses of the mountains, furnished the tribes not merely with food, but with the skins which made their tents and their clothing. The complete extermination of these animals, which has taken place during the last five years, has made an entire change in the mode of life of these Indians. From a race of wandering hunters, they have become a community of farmers, and, as the official reports show, have displayed a remarkable aptitude for the arts of civilized life. Under the direction of superintendents and farm instructors appointed by the Canadian government, they have erected comfortable log-houses, well furnished with cooking-stoves, table-ware, and other household appliances, and have raised large quantities of potatoes, barley, oats, turnips, and other esculents. They have shown themselves always orderly and prudent in their dealings with the government and the white settlers.

The Blackfoot language was formerly supposed to be entirely different from any of the languages spoken by the surrounding tribes. This was the report of the first explorers. Further investigations have shown that this opinion was not well founded. The language proves to be Algonkin in its grammar, but to be in a large part of its vocabulary widely different from other Algonkin tongues. It is evidently a mixed language, of the

kind which results from the conquest of one tribe or nation by another speaking a different tongue. What is known of the history of the Blackfeet shows how this conquest and intermixture may have taken place. The Blackfoot tribes formerly inhabited the Red River country, from which, as there is good reason to believe, they were driven westward by the Crees, who formerly dwelt in Labrador and about Hudson Bay, but who now occupy the ancient homes of the Blackfeet along the Red River and the Saskatchewan. The Blackfeet, when they retreated to their final refuge in the valleys and plains along the eastern slope of the Rocky Mountains, had in their turn to overcome and absorb the population which they found there. The traditions of the people, and other circumstances, seem to show that the tribe thus conquered—and whose language probably furnished the foreign portion of the Blackfoot vocabulary—had come from the west or Oregon side of the mountains.

In further confirmation of this view, it is shown that the Blackfeet have not only a mixed language, but also a mixed religion. While their legendary cosmogony and their principal deities are purely Algonkin, their chief religious ceremony, the famous sun-dance, to which they are fanatically devoted,—the most extraordinary trial of faith and of endurance known among the western Indians,—is clearly of exotic origin. It is wholly unknown to the other Algonkin tribes, except to a few Crees, who have apparently learned it from the Blackfeet. It also prevails among the Dakotas, but chiefly in the western bands nearest to the mountains and to the Blackfeet.

The form of government among the Blackfoot tribes, as among the Algonkin tribes in general, is very simple. Each tribe has a head chief, and each of the bands composing a tribe has its subordinate chief; but the authority of these chiefs is little more than nominal. Their prerogatives are chiefly those of directing the movements of a camp, of presiding in council, and of representing the tribe or band in conferences with other communities. The term 'confederacy,' applied to the union of the Blackfoot tribes, is somewhat misleading. They have no proper inter-tribal league, like that of the Iroquois nations. There is simply a good understanding among them, arising partly from the bond of kinship, and partly from a sense of mutual dependence. Even the three proper Blackfoot tribes can hardly be said to have a general name for their whole community, though they sometimes speak of themselves as *Sauketakia*, or 'men of the plains,' and occasionally as *Netsepoyè*, or 'people who speak one language.'

The foregoing, as has been stated, is only a brief summary of the contents of this report, which is given in an abridged form in *Nature*, and will doubtless hereafter be published in full by the association. The facts which it presents disclose in the people of this aboriginal Switzerland qualities much above the average, and should lead to further inquiry into their history and characteristics.

### SOME REACTION-TIME STUDIES.

THE study of reaction times derives a great interest and importance from the fact that by this means another bond of relation between mind and matter becomes apparent. All material actions require time. Mental actions as well, from the perception of a sensation to the highest expression of the intellect that offers itself to experimental investigation, also occupy an appreciable amount of time. This mental time is not constant as the time of a falling body in space, but is affected by slight variations in bodily and mental conditions.

M. Beaunis<sup>1</sup> has studied the effect of one important mental requisite, namely, expectation. The reactions were made to a visual sensation, and 36 persons besides himself (most of whom were medical students) were experimented upon. A signal (*advertisement*) was given, whereupon the subject held himself in readiness for the flash of light, so as to react by pressing the key as quickly as possible. The time between the signal and the flash of light is the *expectation time*; that between the light and the seeing of it, the *reaction time*. The expectation time was varied from .3 sec. to 3 sec., and the following conclusions were reached:—

(1) As others had already shown, the reaction time is shorter if a signal is given than if it is not.

(2) The *longer* the expectation time, the *shorter* the reaction time. The experiment may be compared to the problem of finding an object in a dark room by bringing the light of a bull's-eye lantern upon it. When there is no signal, that is, when directed to find the object without time to get the lantern ready, it would evidently take longer to find the object than it would if time were given to get the lantern in position; and the longer this time, the quicker would the object be found. The attention acts as the bull's-eye lantern.

(3) The difference between the minimum and maximum times is greater than when a signal is not given, and increases as the expectation time increases.

(4) The influence of several individual differences, etc., was evident. In two of the medical

students the reactions were always slow. In many it was very quick. M. Beaunis was the only person who was accustomed to this kind of experimentation, and in his case a much smaller percentage of experiments had to be thrown out as faulty than in the others. The effect of health was marked in one case. Feeling slightly indisposed in the morning, M. Beaunis's reaction time was .37 sec., *i.e.*, abnormally slow. In the afternoon it was .222 sec., showing that the normal condition was returning. Two hours later it was normal (.160 sec.).

An extremely interesting research is that of Guiccardi and Ranzi,<sup>2</sup> in which they compare the reaction time to a sound impression in normal persons with the same in patients suffering from auditory hallucinations. The reaction time is obtained somewhat in this way. The making of the sound which serves as the stimulus sets into motion a chronoscope, which the subject stops, as soon as the sound is heard, by pressing an electric key. In this way the following table, giving in seconds the time necessary for hearing the sound, was prepared:—

	Normal.	Hallucinated.
Average of 10 shortest reactions out of 50	.1012	.0947
Average variation	.0033	.0046
Average of remaining 40 reactions	.1259	.1408
Average variation	.0132	.0208
Average of all 50 reactions	.1135	.1175
Minimum time	.0885	.0802
Maximum time	.1731	.2287

Taking the mean of the 10 shortest reactions, or comparing the minimum reaction time, we see that those suffering from hallucination are quicker in their perception of sound; and this difference must be ascribed to morbid irritability of these centres of apperception. On the other hand, the other averages, and especially the average divergence from the mean reaction time, *i.e.*, the average variation, and the maximum time, show that normal persons can command a steadiness and regularity of the attention, which is impossible in those afflicted with sound hallucinations.

In many cases the reaction time is and must be studied under rather artificial conditions. This circumstance is apt to weaken inferences drawn from such studies to similar processes in normal mental activity. In a recent study<sup>3</sup> of the time necessary for recognizing letters, numbers, colors, etc., this difficulty has been successfully overcome. Small letters were fastened to a revolving drum, and looked at through a slit of variable width in a screen held before the letters. The letters are

<sup>1</sup> *Revue philosophique*, September, 1885.

<sup>2</sup> "Ueber die zeit der erkennung und benennung von schriftzeichen, bildern und farben," by J. M. Cottell. *Philosophische studien* (Wundt), vol. ii., No. 4. Leipzig, 1885. The work was done in the psychophysical laboratory of Johns Hopkins university.

<sup>3</sup> *Revue philosophique*, September, 1885.