

slide finally came to rest. Here a few trees that were left standing are deeply scarred 10 or 15 feet above the ground where they were struck by trunks that were carried forward over deep snow. A number of excellent heliotype views are given of the mountain, the frontispiece being particularly fine.

W. M. DAVIS.

ZOOLOGICAL NOTES.

REGENERATION AND LIABILITY TO INJURY.

IN a recent number of the *Anatomischer Anzeiger*, Professor T. H. Morgan gives an account of his later experiments on the regeneration of the appendages of the hermit-crab. It will be remembered that his first experiments, made at Woods Hole in 1898, showed that certain appendages, because of their protection within the mollusk shell in which the crab lives, regenerate after artificial amputation quite as readily as the more exposed appendages which in nature are constantly liable to injury, and which actually reveal a much higher percentage of injuries. This result was clearly at variance with the opinion of those who believe that there is a definite relation between the regenerative capacity of a part and its liability to injury.

Professor Weismann attempted to explain the phenomenon by attributing to the more or less protected appendages of the hermit-crab the inherited regenerative power of some remote ancestor—an ancestor which was not domiciled in a shell. Moreover, he thought the fact that the power of autotomy was possessed by the three anterior thoracic appendages—parts frequently subject to injury—and not possessed by the two protected posterior pairs, was evidence of the comparatively recent origin of autotomy, and the more remote origin of regeneration, Morgan having shown that the fourth and fifth pairs of legs do regenerate. In stating that “The adaptation for autotomy once gained, the power of regeneration had of necessity to become localized; that is to say, the apparatus necessary for it had to be transferred to those parts at which alone the breaking off of the the limb occurs,” Professor Weismann gave, to use his form of expression, a new lead which Morgan has again followed in his series of experiments of the summer of 1899. These ex-

periments show that the power of regeneration has *not* become localized, and that the first three thoracic legs can regenerate both when cut off proximal to, and when cut off distal to the breaking-point of autotomy. Moreover, the experiments of Morgan incidentally give additional reasons for his earlier conclusion that there is no relation between regeneration and liability to injury, for in removing the appendages, at a point proximal to the ‘breaking-joint,’ he laid bare a regenerative zone, which in a state of nature must almost never be called upon to exercise the function of repair.

Weismann’s suggestion that in the last abdominal appendage the regenerated part would be renewed after the pattern of a tail-fin of the *Macroura*, rather than after the original pattern of a ‘holdfast,’ is shown not to be supported by the facts.

H. C. B.

COMFORT AND PRODUCTIVITY.

M. MAX GERARD, in the *Bulletin Scientifique*, of the University of Liege, January, 1900, shows the influence of the compensation of the workman upon the productivity of establishments, taking his data from Dechesne, Ansiaux, and Waxweiler. He places the values of services and products, as reported from the several countries, in certain cases, thus:

	Wages per diem.	Value of product: Labor per tonne.
United States.....	12.20 fr.	17.15 fr.
Great Britain	6.25 “	15.15 “
France.....	4.15 “	16.90 “
Belgium	3.20 “	10.50 “

It is thus found that the cost of the product is, as a rule, very slightly affected, in these different countries by the wages paid their workmen, and France, paying one third the wage given in the United States, finds the product to cost practically the same amount. Great Britain, paying one-half the wages paid in the United States, produces very little more cheaply. Belgium pays little more than one-fourth the wages ruling in similar establishments in America and the product costs two-thirds as much, and even this difference may be due, in some degree, to other conditions.

The author of the paper accounts for these facts by the interaction of wages and morale.

largely, partly by the better nutrition of the well-paid man and his improved strength and spirits and ambition. He states that the engineers building the railway from Paris to Rouen made the experiment of furnishing the same nourishing and plentiful diet to their French laborer as was demanded by and habitually supplied to the Englishman working beside him, with the result that, after a short time, the product of the two men became the same. The four cases above were selected from among establishments doing substantially the same sort of work and marketing practically the same quality of product.

"On ne peut expliquer ces faits que par la productivité élevée de l'ouvrier américain qui possède plus d'activité, plus de vigilance, plus d'application au travail que ses concurrents. Il est effectivement placé dans des conditions supérieures au point de vue matériel, intellectuel et moral."

Rankine, in his 'Prime Movers,' makes substantially the same enunciation of a principle, recognized by every experienced manager of works, when, referring to the physical working effect of men and beasts, he states that the daily product depends upon the "health, strength, activity and disposition of the individual," and on the "abundance and quality of food and air, the climate, and other external conditions."

R. H. THURSTON.

SCIENTIFIC NOTES AND NEWS.

MR. DEAN C. WORCESTER, assistant professor of zoology and curator of the Zoological Museum at the University of Michigan, has been appointed a member of the new Philippine Commission. Professor Bernhard Moses, of the chair of political economy of the University of California, has also been appointed a member of the Commission.

THE Paris Academy of Sciences has elected as foreign correspondents, Dr. C. Zittel, professor of paleontology in the University of Munich, and Professor Wilhelm Pfeffer, professor of botany at the University at Leipzig.

DR. A. SMITH WOODWARD, of the Department of Geology of the British Museum, will

visit the United States in the spring to study the cretaceous vertebrates in American museums.

MR. J. B. WOODWORTH, instructor in geology at Harvard University, has been appointed assistant on the New York Geological Survey to study glacial features of New York. Mr. Woodworth will begin his studies in the lower Hudson Valley in the season of 1900.

PROFESSOR O. C. FARRINGTON, of the Field Columbian Museum, has been appointed on the staff of the Commissioner General of the United States to the Paris Exposition, and will spend two months in Paris supervising the installation of the United States mineralogical exhibit.

DR. EDWARD EHLERS, of Copenhagen, will go next month to Crete to make arrangements for the segregation of the lepers on the island. There are about 2000 of these and they will be placed on a small island off the north coast.

IT is announced in *Nature* that Dr. C. L. Griesbach, the director of the Geological Survey of India, has gone for a tour in the famine districts of the Central Provinces, Bombay and Rajputana, with a view to examining into the practicability of sinking artesian wells.

THE Faculty of Medicine, of Würzburg, has awarded its Rinecke Prize of 1000 Marks and a silver medal to Professor J. v. Kries, for his researches in physiology.

THE adjudicators of the Hopkins prize, University of Cambridge, for the period of 1891-94, have awarded the prize to W. D. Niven, M.A., F.R.S., formerly Fellow of Trinity, for his memoir on 'Ellipsoidal Harmonics' (*Philosophical Transactions*, 1891) and other valuable contributions to applied mathematics.

WE regret to record the death of Dr. Oliver Payson Hubbard, in New York City, on March 9th. He was born in Pomfret, Conn., in 1809 and graduated from Yale University in 1828. He acted as assistant to the elder Silliman whose daughter he married. He was appointed professor in Dartmouth College in 1836, having charge of chemistry and geology, and has since 1883 been emeritus professor. Dr. Hubbard was one of the founders of the American Association for the Advancement of Science.

PROFESSOR F. L. HARVEY, who held the