passed a law, Feb. 21, 1884, abolishing the system of contracting for the labor of prisoners at so much per day, and followed it up with a law, dated April 18 of the same year, directing the introduction of the 'public-account' or 'piece-price' plan, as the prison authorities should decide. The contract system, it was claimed, was the source of the unfair competition complained of, and these laws were passed under the agitators' influence expressly to prevent such competition.

The new law took effect on the expiration of the old contracts, in July, 1885, and in the reports of the prison officials for the current year we have a summary of the results obtained thus far; and, inasmuch as several states are having the same experience as New Jersey, the conclusions reached by her officials in this matter are of general political as well as scientific interest.

The 'public-account' plan was so generally discredited, that the officials adopted the other alternative under the law; namely, the 'piece-price' plan. Under this system, the contractor pays a fixed price per dozen, gross, or thousand for work done on materials furnished by him. The introduction of this radically new system occasioned some delay for the purchase of machinery, fitting-up of shops, etc., and the authorities are cautious enough to state that their experience of the new system has been too limited to admit of unqualified indorsement or condemnation. Nevertheless, all the facts and figures presented in these reports point in the same direction. They prove that not only does the state treasury lose largely by the change from the old contract system, but that the contractors are enabled to put their goods on the market at a less cost for manufacturing than ever before; so that, as far as there is any competition with free labor, it is greater under the 'piece-price' plan than it was before. This is a result which reflects upon the sagacity of the agitators themselves; for, if their pet system can be proved injurious on so short a trial, their stock in trade is exhausted.

One contractor who under the former system paid fifty cents per day for the labor of every convict, skilful or unskilful, who went into his shops, now averages less than half that sum per convict. In one or two cases the contractors now pay a few more cents per day's labor than formerly, but this apparent gain results from greatly increasing the quantity of the work; so that, even with an apparently similar financial result to the state, the product is manufactured cheaper now than under the contract system.

These early conclusions from this new departure are interesting. They show that the labor agitators are many, and the mass of political scientists and humanitarians are right in upholding the contract system as the best and most profitable for the employment of convict-labor. Reasonable limitations to the operation of the contract system may very possibly be suggested by experience; but these data from New Jersey ought to insure the rejection of the 'piece-price' plan everywhere, or else some radical modifications in its details.

NICHOLAS MURRAY BUTLER.

NOTES AND NEWS.

THERE is not much to be said of the popular-science articles in the December magazines, for there are not many of them; and what there are, are very popular, though quite interesting. The *Atlantic* adds another to the already long list of reviews on the recent 'Life of Agassiz,' but fails to say, what seems tolerably obvious, that the time has not yet come when the value of Agassiz's scientific labors, or indeed of his influence on the progress of natural history in the United States, can be correctly estimated. John Burrows, in the *Century*, gives, in very readable form, some notes on bird enemies, — jays, owls, vermin, mice, snakes, and 'collectors.' In *Harpers' magazine* there is a highly aesthetic article called 'A winter walk.' It is beautifully illustrated, and well adapted to the wants of ladies of scientific turn of mind. Perhaps the author tried to imitate Thoreau; but if he did, he failed. To persons interested in ornithology, Mr. Edward C. Bruce's article in *Lippincott's magazine*, on 'Birds of a Texan winter,' will doubtless be entertaining. After mentioning a few of our birds that do not migrate, Mr. Bruce goes on to tell us of the northern birds he has seen in Texas during the winter, — plovers, herons, wild geese, etc. The English magazines have even less than the American on natural science this month. There are only two articles to be mentioned. One is by Benjamin Kidd, in *Longman's magazine*, on the 'Humble-bee,' and gives some description of the habits of this insect, based, it would seem, largely on the author's personal observation. The other is by W. Mattieu Williams, in the *Gentleman's magazine*, and is called 'Science notes.' The topics dealt with are, the origin of boracic acid, meteoric explosions, magnetic sifting of meteorites, fireproof paper structures, the future of the negro, the sleep of fishes, and icebergs and climate.

— The dog by which Kaufmann, who is now in Paris for treatment under Pasteur, was bitten, is shown conclusively to have been mad, a dog bitten by it nearly at the same time having since died of unmistakable rabies.

— Prof. Edward Süss delivered in the Geo-

logical institute of Vienna, on Nov. 3, a lecture on the means of preventing explosions in coal-mines. Experiments have been made in the Karwin colliery in order to obtain, if possible, positive results, and these experiments are still being continued. It has been demonstrated that whenever the barometer falls, the quality and intensity of explosive gases increase. The Austrian government has directed that the weather-charts published shall be provided by all the managers of coal-mines in that kingdom, and at Karwin a regulation is in force to the effect that at the approach of a barometric depression all work is to cease in dangerous places.

— The 'Report on the geology of Marion county, Kentucky,' recently published, is in many respects a curiosity. The history, topography, and drainage, treated of in five pages, is followed by the geology in fourteen pages, archeology in five pages, and a list of fossils and notes on Beatricea in eleven pages. The following selection will illustrate the style of the report: "The soil from the disintegration of the Crab orchard shale is quite poor, and responds very slowly to the toils of the farmer; while the forest growth is very much dwarfed, although similar in species to that of the tall, well-shaped, large-sized timber-trees of the epoch before it. The forests originally were well timbered" (p. 17). This last sentence is particularly remarkable.

— Most of the rivers of New South Wales fall into the sea through sandy estuaries obstructed by extensive bars. The removal of these bars, or rather the formation of practicable channels through them, is of great importance to the development and trade of the colony. A paper on this subject was read before the Royal society of New South Wales in June, 1884, by Mr. Walter Shellsbear. The formation of bars at the mouths of rivers is stated by the author to be mainly due to the action of waves in lifting large quantities of sand as they pass into shallow water. The sand is carried up the estuary by the incoming tide, and deposited when beyond the action of the waves. The ebb-tide, being unassisted by the waves, is unable to remove the sand, and hence the tendency is to close the entrance. While strong freshets may for a time sweep a portion of the obstruction away, the frequent occurrence of long droughts in New South Wales leaves the river-mouths in a very bad state. The author advocates the use of break-waters, jetties, and training dikes, more or less parallel, and running out into deep water, three and a half fathoms or more, — a depth beyond which the waves are stated to have no appreciable effect on the bottom.

LONDON LETTER.

ONE of the matters which grew out of the education conference at the International health exhibition in London in August, 1885, some account of which appeared in the columns of *Science*, was the proposal for the establishment of a teaching university for London. The present University of London is mainly an examining board. In the case of its medical degrees, attendance upon specified courses of instruction in one or other of the medical schools recognized by the university is compulsory. The degrees in arts, science, etc., may be obtained by any persons, of either sex, who can satisfy the examiners as to their attainments, no matter whether that knowledge has been acquired by private study, private tuition, or college attendance. In point of mere attainment, the London degrees rank higher than the corresponding degrees of any other university; but they do not imply, as those of Oxford, Cambridge, etc., do, that their holder has been taught in colleges by men of university rank and standing, and according to university methods. The scheme of examinations laid down by the senate of the University of London naturally exercises a very wide influence upon the subjects taught in schools and colleges all over England; since more than two thousand candidates annually enter for the matriculation, or entrance examination, of the university. As there is no official connection between the senate and examiners on the one hand, and the principal professors and teachers on the other, the latter (some of whom are men of the greatest eminence and of world-wide fame) naturally feel aggrieved at the dominant influence which the university exercises over their courses of instruction, since they are practically compelled to teach those subjects prescribed for examination, and almost those alone. Moreover, there is a growing feeling that the enormously wealthy guilds and companies of the ancient city of London will be shortly compelled, either by actual legislation or by the potent force of public opinion, to appropriate more of their funds than they at present do, to educational purposes. These were the two main ideas which led to the formation of the Association for the promotion of a teaching university for London. On this body are representatives of all the principal educational institutions of London, in the four great faculties of arts, science, laws, and medicine. Large bodies take time to move, and, where there is much diversity of opinion, it is very difficult to formulate a scheme which shall meet with the acceptance even of a bare majority. This desirable stage has not yet been attained. The members of the existing university of London, however, naturally had to con-