

THE GIGANTIC JAPANESE BALLOONS.



The above pictures give a very comprehensive idea of the great balloons that the Japanese used to such splendid advantage in the long siege against Port Arthur. Their air scouts sailed over the beleaguered forts at will in these immense air machines and took account of the position of the enemy whose guns were unable to reach them. Perhaps balloons never before have been used to such excellent advantage as in that part of the war.

mission, appointed to consider the education and training of officers of the army. Their report showed that cadets had "little inducement to work at Sandhurst and instructors little inducement to teach." Most of the military text books in use were found to be antiquated and obsolete. There was no insistence on a high standard of proficiency. To get through with as little trouble as possible was the dominating idea. Neither as regards knowledge or character was the training of the kind necessary to produce competent officers.

"The commander-in-chief," said the report, "has expressed himself as dissatisfied with both the technical and the general education of the officers, and many witnesses have stated that it is no uncommon thing to find officers unable to write a good letter or to draw up an eligible report. That this is an exaggerated statement I can vouch for. I have had officers come to me for instruction—rich men's sons and former pupils of our much vaunted public schools—who told me they were ashamed of being dependent on others to write the reports for them and show them how to perform their duties."

NO IMPROVEMENT.

"But the Akers-Douglas report was made more than two years ago. Surely things have been improved since then," I suggested.

"They have not improved a bit," said Dr. Maguire, decisively. "In some respects they are even worse than they were then. If anything could be more humiliating than that exposure of the contemptible inefficient training and gross ignorance of many of our military officers it is the fact that, although more than two years have since elapsed, nothing has been done to remedy the defects pointed out."

"In an address at the Woolwich Royal Military Academy—which, though much inferior to West Point, is considerably ahead of the Sandhurst institution—delivered a year after that report had been published, Lord Roberts complained that the examinations showed that the candidates were 'strangely deficient' in 'spelling, knowledge of the English language and map reading.' To properly appreciate the significance of this censure it must be understood that Lord Roberts was addressing young gentlemen who had ceased to be cadets, and having passed the entrance competitive examinations were about to join the commissioned ranks of the British army. It would be utterly impossible that such words could ever be spoken of West Point graduates. For such gross ignorance of rudimentary branches of learning they would have been dismissed long before their final examinations were reached. It was stated in a leading journal recently that in general education and capacity board school boys are far superior to the average Eton, Harrow and other scholastic boys. If the latter schools are not speedily reformed or abolished the richer classes of England will soon be decadent."

"We have profited nothing by the numerous 'regrettable incidents' of the Boer war that were so largely due to the incapacity of commanding officers. Only a few days ago Gen. Hutchinson issued a report on the examination of promotion of officers in the regular army which reveals a state of ignorance among many of the candidates that can only be characterized as disgraceful. General Hutchinson states that 'bad spelling and inability to express themselves clearly' were the failings of a large number of them. Many of them showed that they were unfit for the duty of instructing non-commissioned officers and men owing to being themselves insufficiently instructed. The general deprecates the fact that the neglect to keep their military knowledge up to date by reading and study, as even in other professions have to do. He describes the results of the examinations in military engineering, tactics and topography as 'indifferent' and candidates generally failing to appreciate the situations in the problems given them to solve, the 'majority of them ignoring the enemy or giving him credit for little intelligence.'"

IGNORANCE OF BRITISH OFFICERS.

"It is appalling to reflect what disasters such incompetency is here shown would lead us into if we were engaged in a war with a first class power—with Russia, for instance, for the possession of India."

"It should be borne in mind that the shortcomings to which Gen. Hutchinson alludes indicate not merely defective military training, but imperfect elementary education. The report, therefore, constitutes quite as much an indictment of our civil public schools—Eton, Harrow, Rugby and such places where the classes from whom our officers are drawn are chiefly educated—as of the institutions where they receive their professional training."

"Owing to the shortage of officers caused by the casualties of the Boer war, many young gentlemen—graduates most of them of these public schools—received commissions without passing the usual examinations. In India large numbers of them, according to an official report, were found to be 'so wanting in elementary education as to be incapable of receiving the ordinary garrison instruction. Many of them, therefore, had to have recourse to the regimental schoolmasters to remedy the defects of expensive educations which had left them ignorant of the simple branches of learning that are obligatory in the higher grade classes of the board schools. As we term our free schools. Surely no more humiliating report was ever issued about the officers of an army."

"Napoleon apprised the relative value of brain power and physical power in warfare at three to one. Taking into account the enormous strides that have since been made in the application of science to war, Lord Roberts now estimates it as ten to one. And yet we continue to neglect elementary education in the army on men who are not only ignorant of all scientific knowledge, but likewise of the very rudiments of an ordinary education. The officer class is not to blame. It has clamored for general and technical education for the past 15 years, but social influences and false economy are against any reform."

WORST SCHOOLS IN THE WORLD.

"The truth is, our fashionable English public schools are about the worst in the world. Useful studies are neglected for Latin and Greek, and even these are ill taught. The schools are hotbeds of snobbery. They kindle no desire for an education of life. They are pursued with enthusiasm. Their ordinary products are the most ignorant and uninteresting men of social position from Tokyo to Budapest and thence to San Francisco. Compared with the graduates of American colleges and universities, they are simply 'not in it.'"

"But how about that famous saying of Wellington's we hear quoted so often: 'The battle of Waterloo was won on the playing fields of Eton?'"

"I am certain that Wellington never said it," answered the doctor, "for he was a truthful man, and no man could have known better the utter fallacy of such a statement. Wellington, fortunately for himself, spent only a few months at Eton. He trained for entrance into the army under a military coach at Brussels. None of his famous generals were public school products. At an age when the youths of these institutions are neglecting their brains to acquire proficiency in football or cricket they were mastering the art of war with their regiments in actual service. There never was a great soldier or a great man, in any sense—who was distinguished as a young man by his devotion to games."

It is the cult of decadence; it represents the abasement of intellect. "Least it be thought that I am too severe on our public schools let me read you some things that A. C. Benson, himself an Eton master, has said of them:

"It must be frankly admitted that the intellectual standard maintained at the English public schools is low, and what is more serious, I do not see any evidence that it is tending to become higher. My own belief is that a good many boys have the germ of intellectual life in them, but that in a good many cases it dies a natural death from inanition. Unless a boy is very keenly interested in intellectual things his interest is not likely to survive in an atmosphere which is all alive, indeed, but where intellectual things are, to put it frankly, unfashionable."

AMERICA COULD WHIP ENGLAND.

"The degradation of education which is fostered at these institutions," the doctor continued, "is vitally connected with the question of army efficiency, because a desperate effort has been made and is still being made to limit the selection of officers to candidates from certain well schools and universities. It has been abundantly demonstrated that many members of the cabinet, and many of the war office authorities, too, would prefer as officers wealthy dilettantes from fashionable schools, who would display hopeless incapacity in war, to able men who have been well educated at private day schools or by private tuition."

"Despite all the costly lessons we have received as to the vital need of scientific training for our officers, the army advisory board—'dona and schoolmasters' as Lord Roberts contemptuously termed them—persuaded the Etonian secretary of war last February to agree to a scheme of education which is a marvel of incompetency. The course would have the effect of keeping out future officers at big boarding schools until they are 19, and by a subtle arrangement securing that rudimentary science or general history. In other words, providing for another abundant crop of 'regrettable incidents' in our next big war."

"The fact is, the ruling classes—products of the same system of defective education and men for the most part quite incapable of earning their own livings in any industrial or commercial pursuit—are hopelessly incompetent for the government of the empire. Man for man, the members of the American cabinet are greatly superior to ours. They are practical men who have demonstrated their ability by achieving success in business or professional life before they received their high appointments."

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"If, after America has brought her navy up to the high standard which she aims at, we should ever have the misfortune to go to war with her—which God forbid—she would flatten us out like a pancake."

SCIENTIFIC MISCELLANY.

Rev. Carlisle P. B. Martin, L.L.D.

Of Waverly, Texas, writes: "Of morning, when first arising, I often find a troublesome collection of phlegm, which produces a feeling of sore throat, and a little, but a small quantity of Balar's Horehound Syrup will at once dissolve it, and the throat is over. I know of no medicine that is equal to it, and it is so pleasant to take, I can most cordially recommend it to all persons needing a medicine for throat or lung trouble. See, 50c and \$1.00. Sold by Z. C. M. I. Drug Dept."

Principles of construction that architects have slowly worked out.

Architects have slowly worked out, Lord Avebury suggests, were adopted by plants millions of years ago. Some plant stems are round, others are triangular, others quadrangular, and so on, and it seems possible to give a mechanical explanation of the difference. Builders have adopted the girder as the most economical form of resisting a strain in one direction. Plants seem to have built on a like plan, tree-trunks being round to resist strain from all directions, while plants with opposite leaves and strain in two directions have two girders, giving quadrangular stem, and triangular and pentagonal stems may be accounted for as strengthening against like obvious strains.

The secret of the extermination of rats and mice is claimed by the Pasteur Institute. In their experiments to reduce the ravages of these pests over five square miles of French fields, orchards and vineyards, several tons of bread and oats were impregnated with certain microbes that seem to be fatal to these animals and harmless to others, and this paste was scattered over the ground. The effect has been astonishing. The rats and mice have been destroyed in enormous numbers, and it is estimated that not more than five per cent survived the first application.

The great Victoria Falls on the Zambesi are estimated by British engineers to represent 25,000,000 horse power, or five times the power of Niagara, with some diminution in the dry season. It is proposed to develop the power for irrigating Rhodesia, operating the mines on the Rand, etc. The spray, thrown 200 feet high and scattered as fine rain, is expected to interfere with high-tension electrical transmission.

A new type of compound gas engine has been developed by the French engineers. It has two high-pressure cylinders and a single low pressure cylinder between them, and the exhaust from one high pressure cylinder is expanded at every forward stroke in the low-pressure cylinder, the crank of which is 180 degrees behind the high pressure cranks. An impulse is thus given every half revolution. The high-pressure cylinders, working on the Otto cycle, give one impulse at each revolution, and when these were tested alone a 3.2-horse power engine developed only 1.9 horse power, while the complete 12-horse power engine was used. The power is therefore increased 46.2 per cent by the use of the low-pressure cylinder, without any additional fuel consumption.

The calorific values of various fuels used in internal combustion engines have been compared by L. Levl, a French engineer, with these results in British thermal units per pound: Methylated alcohol, 16,650; a mixture of equal parts of methylated alcohol and gasoline, 14,250; crude American oil, 19,630; refined American oil, 19,630; unmixed alcohol a little warming of the

wild cattle of English parks were long regarded as direct descendants of the wild aurochs, but are now believed to have come from domesticated albino breeds.

The economy of high-pressure steam has been demonstrated on French locomotives. From experiments on five types of engines during three years, J. Nodal has found that variations of speed from 25 to 50 miles an hour have little effect upon the steam consumption per horse-power hour; but that the consumption of 21 to 22 pounds per horse-power hour with a boiler pressure of 200 to 215 pounds per square inch rises to 25 to 26.5 pounds with a pressure of 100 to 125 pounds.

Two of the world's interesting mammals have lately become extinct without attracting attention. An English naturalist points out that the great straight-horned race of the Indian buffalo, which was occasionally met with 50 or 60 years ago, is no longer known. The other vanished form is the wolf of the Falkland Islands, a type of considerable importance, which seems to have been exterminated by strychnine about 30 years ago.

Tin ore has been found in the Carolinas, the Black Hills of South Dakota, southern California and Alaska, with traces in Maine, New Hampshire, and elsewhere. Thus far, however, tin has never been profitably mined in the United States. The work accomplished in recent months at Nigger Hill, South Dakota, seems to give promise of good results, two ore bodies of 150 by 50 feet and 80 by six feet respectively, proving to have an average value of \$1.25 per ton.

Rheumatism seems to be practically unknown in Japan. A French observer attributes this to the sobriety of the people, their vegetarian diet, and their great use of water. They not only drink large quantities of pure water, but take two or three baths daily throughout the year.

Late experience in the British navy has suggested that loathsome disease may be spread by tattooing, and those who must decorate in this way are warned that the needles should be sterilized.

Another Good Man Gone Wrong.

He neglected to take Foley's Kidney Cure at the first signs of kidney trouble, hoping it would wear away, and he was soon a victim of Bright's disease. There is danger in delay, but if Foley's Kidney Cure is taken at once the symptoms will disappear, the kidneys are strengthened and you are soon sound and well. A. R. Bass of Morgantown, Ind., had to get up ten or twelve times in the night, and had a severe backache and pain in the kidneys and was cured by Foley's Kidney Cure. For sale by F. J. Hill Drug Co.



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