

**The Psychology of a Jury in a Long Trial.\***

Take twelve men from active life, confine them in a court room six hours a day, and expect them to observe closely, remember and reason soundly on the evidence offered, with no guide except some general principles of law and equity. They are also expected to exercise judgment and discrimination of facts that require training in the most favorable surroundings. In reality the ordinary jury is selected from active working men unused to confinement, and unable to think and reason continuously on any topic outside of their everyday life.

They are untrained to discern the probable facts in a contested case, and understand the real from the apparent in the arguments of counsel. The confinement of the court room, its bad, vitiated atmosphere, with the changed diet of hotels in a long trial, make them still more unfit. A grouping of some facts will make clear the purpose of this note. In a recent murder trial seven farmers on the jury were confined five days in the court room and hotel. They all suffered from indigestion, and two of them were ill in bed for some weeks after. One of these men was a Second Adventist, and the counsel referred to the certainty of the sudden coming of the end of the world and the strict accountability of each one, and urged an

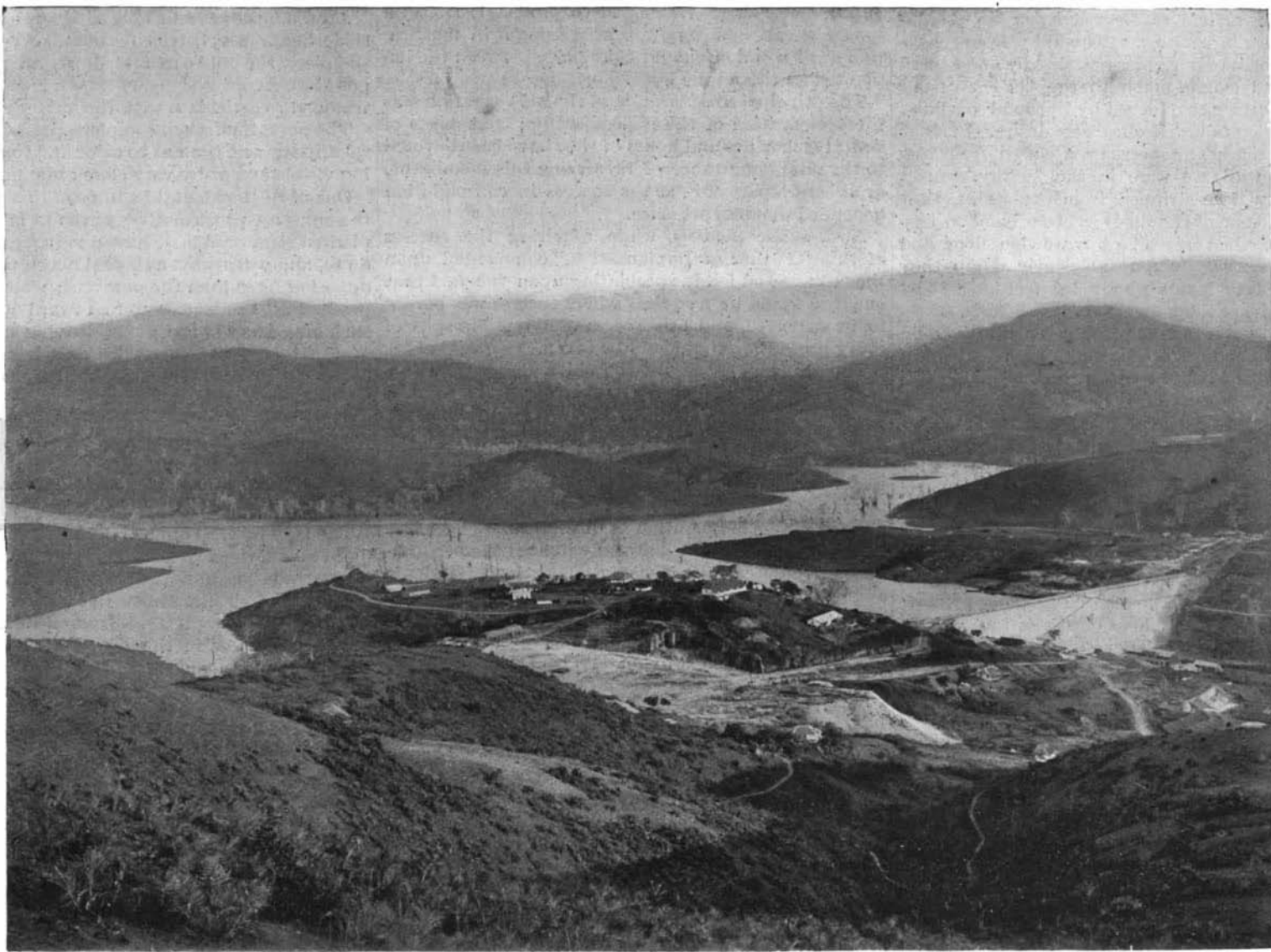
tion in the power this position brings them, and are governed in their judgments by the flattery of counsel. When told they have excellent judgment and will decide in such a way, they follow this advice, evidently. There are always men with a mental "twist" or bias in the average jury. In good surroundings and in good health this would be concealed, but after a day or more in the court room it becomes a dominant factor. Strong religious, temperance and political views intrude themselves, whenever the man becomes at variance with his surroundings, and its natural physical and psychical influences. Lowering and changing the degree of health and functional activities makes him more intolerant of the divergent views of others. After the second or third day of a trial, appeals to these conceptions and efforts to make some facts apply along these lines are always effectual. Emotional, impulsive men, who are controlled largely by the surroundings, are always objects of concentrated interest by shrewd lawyers. In the first part of the trial they are not so influential as later, when the mental status has dropped down; then they may become infused with certain conceptions of the case, particularly for punishment or acquittal. The morals of a jury on a long trial are lowered markedly near the end of the case. If undue influence is used or

**THE GREAT DAM OF THE PERYAR, INDIA.**

The Peryar work is that of turning the water of the Peryar River, flowing westward through the well-watered mountains of Travancore, in South India, eastward through the sterile plains of the Madura district. Six miles west of the eastern brow of the Travancore Mountains the great dam is being erected by which a lake is being formed that is to turn and empty its overflow into a tunnel already cut through the eastern brow, a tunnel 5,700 feet in length by 7½ feet high and 12 feet broad.

The first illustration shows the dam with the lake. So recently has the lake been formed that the partly submerged trees are seen sticking out of the water, some of them still struggling, as it were, for their life.

The buildings on the knoll in the center are the residences of the engineers. The cutting between the houses and the spur of the mountain in the left foreground is to be the water escape when the dam is raised to its intended height. It was a great task to cut that down in the solid rock. The stone taken out has been utilized in the construction of the dam, being carried down to the river bank by a gravity railroad running to the buildings at the foot of the dam and conveyed thence by moving buckets suspended on

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acquittal of the prisoner, which was done. The effect of confinement, overeating, and bad, poisoned air, with mental strain to accommodate themselves to the unused requirements of the position, react on the brain, making its operations more unstable and uncertain. After the third or fourth day the judgment of an average juror dwindles into caprice and changeable whims. A certain number will become possessed with a dominant idea concerning the case, which will grow under any circumstances irrespective of all reason or judgment. It becomes literally an "obsession," that is, not changed, although another view may be accepted for present purposes. Others will be thoroughly confused and mentally demoralized, and incapable of coming to any conclusion. The evidence will be a chaotic mass, from which they are unable to extricate themselves. The longer the trial, the more bewildered they become, and at last follow the lead of the majority in despair of anything better. Another class becomes more and more indifferent to the merits of the case, as their physical condition deteriorates; their only interest is to reach the end of the trial; like the former class, they sit listless, neither seeing nor hearing anything with intelligence. At the close they join the majority in any verdict. Another class of superficial, vain men take great satisfac-

if such influences are purchased, the time to do this is when the effects of confinement, bad air, food and derangement of the physical system appear. However honest a jury of average men may be, a change of surroundings and physical vigor will react on their conceptions of right and wrong and strangely incapacitate them. If any of the jury are invalids, or have been confined with dietetic or neurotic diseases in the past, the changed conditions of the jury room are very likely to bring out some entailments of this condition, still further complicating their mental soundness. Pessimistic men who are in ill health are always ready to recognize guilt and inflict punishment in every case. Their ideas of justice are always based on vengeance and punishment. The suspicion of crime is always a reality and evidence to the contrary is deception. Many of these men in excellent physical surroundings would act and reason with fairness, but change the surroundings and degree of health, and they are unsound and unreliable. The psychology of a jury on a long trial furnishes a range of facts that, when understood, the verdict of these men could be predicted with great certainty, no matter what the evidence may be.

PROF. DURAND, in an article in Cassier's Magazine, discusses ship propulsion by storage batteries, and concludes that for the same amount of energy storage batteries at present weigh about 550 times as much as coal and occupy about 220 times the space.

cabies that are stretched from point to point wherever material is needed.

It was at this workshop below the dam that the most serious accident of the whole enterprise occurred.

Mr. Taylor, the superintending engineer, was standing over a large horizontal wheel that conveyed the power from the turbine to the buckets, when a bucket came moving along overhead. To avoid the bucket he moved aside and fell on to the horizontal wheel and was caught and mangled. He lived but a few hours after.

The dam rises from a width of 138 feet at the bottom to 22 feet at the top. Stone masonry on each side, with a solid mass of cement within, is the method of construction. As it rises it is to extend over the hill at the further end until its length will be 1,300 feet. At present the length is about 1,000 feet. The river at the bottom was originally about 300 feet wide.

One of our illustrations shows the top of the dam with the swarms of coolies working on it.

The quantity of water in the dam varies greatly. In the driest months it diminishes to something like 100 cubic feet a second, with occasional small freshets of 1,000 to 3,000 cubic feet a second, of short duration.

During the monsoons it increases to an average of 2,000 cubic feet a second, rising at times to 20,000 or 30,000 cubic feet a second. The largest recorded flood was in November, 1873, during a cyclone, in which 28

\* Read before the Psychological Section of the Medico-Legal Society, Nov. 12, 1894, by T. D. Crothers, M.D., superintendent Walnut Lodge Hospital, Hartford, Conn.—From the National Popular Review.

inches of rain fell in two days. The discharge then was estimated at 120,000 cubic feet a second.

The following are further particulars kindly furnished by A. T. Mackenzie, Esq., one of the engineers:

When finished the dam will be 178 feet high, 12 feet wide at the top, with a parapet 4 feet high and 4 feet thick, and will contain 5,000,000 cubic feet of masonry.

The bed of the river is solid rock; so there are no underground foundations, and the dam is actually 178 feet above the lowest water level.

The present height is 136 feet and 4,200,000 cubic feet of work is already done. The depth of water is 89 feet, but the escapes are now stopped and the lake is being allowed to rise to 128 feet depth, where a new set of escapes are ready for it.

The area of the lake will be 14 square miles and the outflow through the tunnel 1,600 cubic feet per second. Its maximum depth at the dam will be 174 feet.

The tunnel has been driven all the way through hard syenite, with no slips or soft places, and is a very straightforward and uneventful tunnel.

Leading to and from the tunnel is about a mile in all of open rock cutting, 25 feet wide and from 30 feet depth to nothing.

An average of over 4,000 people were employed on

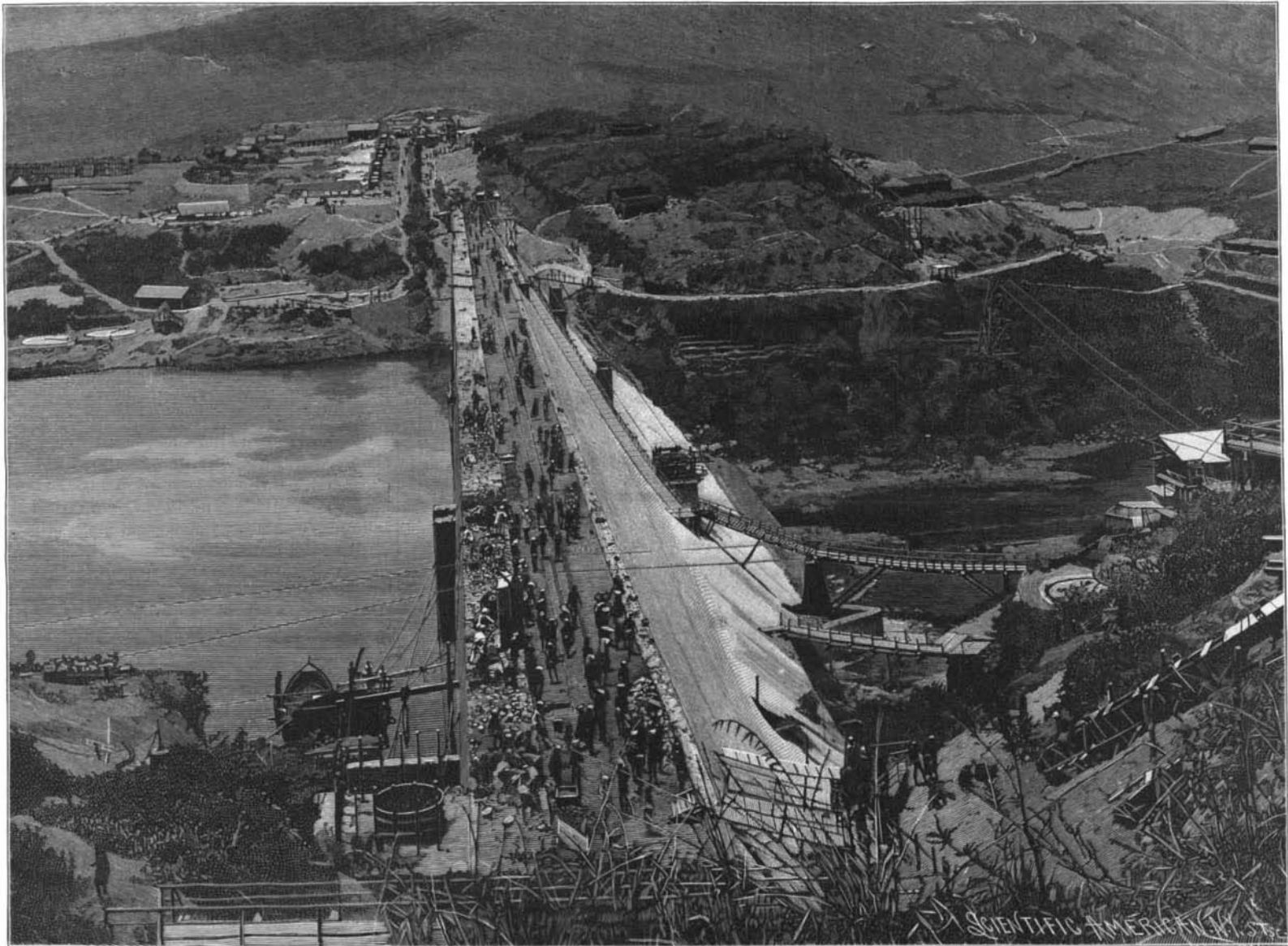
#### Building a Levee with Force Pumps.

Captain George McC. Derby, the able young engineering officer who has charge of the federal engineers in New Orleans, has announced that the attempted feat of building a levee with force pumps on the great dredge, the Ram, was successful. Captain Derby, believing that levees could be built by this means, attempted the experiment on the levee at Nine-mile Point, opposite Carrollton. Captain Derby cannot state yet what the real result of his experiment exactly is, as the present attempt was made with a view to discover a method rather than to avoid expense. Four attempts were made by the engineers. The levee existing at Nine-mile Point before the Ram went to work was of small section and low height. It was desired to enlarge it to a size almost as great again as it then was. The Ram was stationed about 400 feet away, and the piping was laid to the work, so as to permit the pumps to send a stream of sand and water, scooped from the river bottom, to the work. This stream was delivered at a height of about ten feet, and the volume of water was so great that the consistency of the mass was very thin. Captain Derby first threw up a small levee behind the original one, and attempted to fill in the space between the two. It was found that the silt was readily deposited, while the water ran off, leaving

unfilled, thus forming between the toe of the upper terrace and the board defending the outer edge of the lower terrace a sort of cup, into which the overflow from any subsequent crevasse was caught and held. This method was found to work perfectly. Of course, in an enterprise of this kind, its practicability depends on the cost per yard of work done by the dredge. The Ram is very powerful, having been built under contract to deliver 300 cubic yards of material 300 feet distant from the dredge every hour. In practice it was found that she could deliver about 2,000 yards per working day of ten hours. The total cost per cubic yard of a levee built by the Ram to a height of 10 feet will be 3.91 cents per yard. Hitherto the price of levee work has ranged from 10 to 12½ cents on an average per cubic yard.—New Orleans Picayune.

#### The Tourah Prison.

The chief prison in Egypt for male hard labor convicts is at Tourah, about eight miles south of Cairo, where the adjacent quarries, which once furnished limestone to the builders of the great Pyramids, supply unlimited scope for labor six days a week. There are 950 convicts, and though 100 of them are "lifers," there are others whose term is only for six months. Strict discipline is maintained by sixty-five warders,



THE GREAT DAM OF THE PERIAR, INDIA.

dam and tunnel during the last season. Besides the coolies there are three steamers, four turbines from 180 horse power downward, and a large number of portable steam engines, boilers, etc. It is to be finished before April, 1896.

The total cost of the work, including distribution works in the Madura district, will be 83 lacs of rupees, or between three or four millions of dollars. Besides this, the British government pays the Rajah of Travancore 40,000 rupees annually for a lease of 999 years. In return for this the British government is allowed to take all timber comprised in the watershed of the lake, for use on the works, but not for sale or export. It also obtains fishing rights in the lake—a concession worth exactly nothing. It is altogether a very poor bargain for the British government.

But the conception and completion of the work reflects lasting glory and honor upon the enlightened spirit of the British government and upon the skill of all the engineers connected with the Periar. The illustrations are from photographs taken by Rev. W. P. Elwood, missionary of the A. B. C. F. M.

Madura, May, 1895. J. S. CHANDLER.

MAXIM's cavalry gun, which fires 700 shots a minute, weighs but thirty pounds and can be carried strapped to a soldier's back. The gun he made for the Sultan of Turkey fires 770 shots a minute, but it is a field piece on wheels.

a thick, heavy mass of solid earth. As soon as this topped the rear embankment, an effort was made to raise the barrier by increasing its height from the deposit made from the pumps. The material was, however, too dense and glutinous to be worked fast enough, and a crevasse occurred. This method was then abandoned. A framework of lathes, covered with jute bagging, was substituted for the small rear levee, it being thought that the water would pass readily through the bagging and the silt be retained. The result was fairly satisfactory, but very expensive. Planking was then substituted on timber frames, but the stream ate out the toe of the framework and the fluid escaped. The last method was very ingenious. It was found both cheap and efficient. Captain Derby took a plank a foot wide and pinned it on edge about 12 feet away from the toe of the old levee. The board was driven a small distance into the turf, in order to prevent the material from seeping under and escaping. The pumps were started, and in a few minutes a terrace was formed as high as a board, the water escaping over the board. Then a second board was set on the terrace a few feet nearer the old levee. This, too, was filled in, forming a second terrace. It was found, however, that when each terrace was filled up entirely to the height of its defending board, a crevasse was likely to occur when the next terrace was built, and the work ran grave chances of being demolished. Captain Derby obviated this by leaving four inches of each terrace

who are unarmed and do not carry even a stick or whip; but by night there are nine sentries and by day there are four, who patrol the roof and the outside of the prison, and who know how to use their loaded rifles with deadly aim. These sentries are blacks from the equatorial provinces, and have prevented more than one attempted escape. Nearly all the convicts are natives of Egypt, the blacks only supplying five per thousand and the Nubians averaging only two per thousand. Any extra bad characters among the convicts, such as the ringleaders of attempted revolt or escape, are locked up at night in solitary cells to lessen their chances of contaminating their fellows. As a whole, the convicts are by no means a ruffianly type, and their physiognomies are very like those of the ordinary peasant. In this country, where crime is at such a minimum and where even the lunatics are as quiet as sheep, it is not too much to hope that education and improved environment may one day do much to improve the lot of the townfolk, from whom the convicts are mostly drawn. The "ticket-of-leave" system has not yet been introduced into Egypt, and would certainly be worth a trial, for at present there is very little incentive to well-conducted convicts to lead a peaceful, hard-working life within the prison bounds. Every visitor cannot fail to be struck with the very healthy, well-fed appearance of the prisoners, and on inquiry I was told that there were only fourteen on the sick list.—The Lancet.