ally — not on public grounds, but for the purely selfish purpose of avoiding expensive accidents (that is, in self-preservation) — by the railways of the United States, in premiums for new inventions, in training-schools and shops for the education of its servants and the development of improvements, for the purchase of the latest devices for the saving of life and property, he will find his command of figures taxed to express the aggregate result. And if he will remember the number of courts and lawyers in this great country of ours, and the general gusto with which juries mulct railway-companies, he will not wonder, I think, that science cannot move fast enough in devising improvements to be utilized in the physical management of railways. The presumptive margin of profit in railway-operation is small enough as it is; but when the recurrence of such accidents as those at Republic, at White River, at Forest Hills, at Chatsworth, and at Kout's Station are admitted into the forecast, it is apt to produce a rather considerable shrinkage in the prospect, or in the temptation of stockholders to build more railroads.

Congress has lately established a bureau at Washington for the filing of railway-schedules, and for discovering what, if any, 'long hauls' and 'short hauls' can possibly be "under substantially similar circumstances and conditions." What public benefit this bureau may become to the public, it remains to be demonstrated. But, if the establishment of another bureau or commission to devise a means for supplying railway-companies with infallible employees were contemplated by the government, the government's good intentions, at least, could not well be questioned. Of the three millions of railway-employees in this nation, the percentage who do not do their duty is too microscopical for expression in decimals; but the railway-industry happens to be one in which an invisible percentage of carelessness produces enormously visible calamitous results; that is the price we pay for being carried back and forth to our business at five miles in ten minutes instead of five miles in an hour. But before the absolutely infallible employee is found, some eminent counsel of a railway-company may yet be bold enough to claim, that, since railroad-companies cannot take their brakemen and track-walkers from the class of the community which produces Sumners, Websters, and Conklings, the unknown mental processes which sometimes lead a brakeman or a track-walker, from causes entirely and subjectively mental, to happen to think of something else than his routine duty, ought to discharge a corporation which has no soul — if not from pecuniary damages for loss of life, limb, or property it has no agency in procuring, at least from newspaper declamation, and charges of sacrificing its passengers and patrons to mere 'greed.' Since, however we may explain it, it happens to be one of the most persistent of truths that accidents are of more frequent occurrence upon bankrupt or non-dividend paying than upon solvent and dividend paying railroads, one might say, logically speaking, that the 'greed' of a railway-company was a public security rather than a danger.

There is an apparent moral to be drawn from these records of casualty, which, from one point of view, perhaps, is safe enough. We may say, and say with great truth, that no achievement of applied science can be substituted for human watchfulness and care, but only for human skill. But to this there would be exceptions. The automatic hay-press, which rams and packs and binds not only, but debouches the completed ball in time to pack another in the place from which that ball is debouched; the Hoe printing-press, which counts the sheets it prints; and hundreds of others, — are watchfulness personified (and I am told that there are mechanics employed in the most delicate processes of watch-making which are said even to correct a chance misplacement of the material to be worked upon); but, since the operation of none of these is occupied with the transportation of human beings, should these automata fail, no lives are lost, and no public outcry awakened. The better statement is, I think, that no machine can counteract human wilfulness or neglect. The machine can only do the share of work allotted it. If the man fails in his, no accuracy of invention can suffice. A dial may register the failure of a watchman to visit a certain point so many times a night, and tell its unalterable tale in the morning. But, where a train of human freight rushes on to death and disaster, death and disaster tell the tale, upon the instant of the dereliction, and when it is too late to correct the fault or supply the omission. And the public scarifies with its denunciation the owners of the machine, and not the man or men who ought to have cleared its track but did not.

Everybody must trust somebody, corporations must trust everybody they employ: nay, more, the railway-company must not only trust everybody, but it is at the mercy of every track-walker on its line; and, worse than that, every passenger that a railway transports, every pound of freight it moves, is at his mercy too. Should that track-walker's eye be turned from an obstruction or overlook a detail, the eternal vigilance of every other servant of the company is worse than useless. The crash must come, and all the sooner because the machinery which moves the train is of the latest and best, and the coaches the completest and most luxurious, that human ingenuity has devised. Penalties, threats, the prospect of rewards, alike fail to make the man do his duty, or to prevent his forgetfulness or wilful absence of mind or body at a crucial point, or the intellectual hiatus of a moment which causes his hand to forget once in a half a million of times the required act which it is quite his second nature to do at all the other times. What is it? Is it an 'Act of God?' Is it inevitable necessity, or is it Nemesis?

The physical perils of the sea appear to have been already overcome. But the peril of panic remains, that no human ingenuity can prevent, and no human discipline, however it may foresee, control. The wheelsman of the 'Ville de Havre' had watched a vessel steering towards them for hours in a clear night; but when that vessel was about to crush the great steamer, the very thought of the monumental magnitude of the approaching peril paralyzed that wheelsman's brain, and the brain-paralysis steeled his hand, and he could not turn his wheel the few points that meant safety to a priceless human freight. What is there to provide against here? Shall we still preserve the antique phrase 'Act of God,' or merely say that it is fate or luck? Call it what we will, there is yet, it would seem, an element in all mundane affairs for which nothing human can invent an antidote or remedy, and which possibly should relieve us, under our human laws, of the responsibility. Whether or not mere human framers of human laws ever devise a statute for the emergency, of one thing, however, we can, I think, be sure enough; namely, if a relief from this 'Act of God' should ever come, it will be because science, and not the reporters, nor yet the leader-writers of our daily newspapers, have grappled with the problem. Every thing except the human brain, the human brain appears to have conquered or to be in a fair way to conquer. But to go outside of itself to control itself — that, it seems, so far, to have been unable to do. APPLETON MORGAN.

SOUND-BLINDNESS.

THE phenomena of color-blindness are well known, and have been carefully investigated. We know that some persons can see to great distances, discern minute objects, enjoy works of art, and yet are unable to distinguish certain colors. Physiologists, and especially psychologists, have also found that there is a similar series of phenomena to be observed in connection with the sense of hearing. If a word were coined to describe these phenomena, it would naturally be 'sound-deafness,' but many who have written on this subject seem to prefer the term 'sound-blindness.'

A writer in the London *Journal of Education* uses the term 'sound-blindness,' and seems to have come to the subject from a pedagogic standpoint. He states that the difficulties which some persons have in learning to spell and in learning how to pronounce foreign languages suggested to him the possibility of the existence of such a thing as sound-blindness, — an inability to distinguish particular shades of sound, arising from some organic defect in the ear which is distinct from deafness, as that term is commonly understood.

The writer in question noticed that a small boy, in writing down a line of poetry which he had learned by heart, had spelled the word 'very' 'voght.' When some experiments were tried, it was found that the boy could hear no difference between 'very,' 'perry,' and 'polly,' and yet he was not deaf. The boy in question had great difficulty in learning to read, and, on inquiry being made, many teachers were found who testified to the fact that it is quite a common thing to meet with children who are very slow in learning to read precisely, because sounds, different to the teacher, were not different to them. It was also found, that, when a class of

boys reads aloud, some of them often give, instead of a word, its synonyme, though the latter be quite different in sound from the former. "The boys who were most apt to do this were the boys whose power of hearing was already under suspicion; and I inferred that they associated the printed letters, not with their sound, but with the concrete thing which they represented, much as if they had been a picture."

Another interesting observation is that of a boy of eleven years of age, who is a bad speller, and, when writing from dictation, makes mistakes in words which have an *r* or an *l* in them. He cannot pronounce those letters; but his failure is believed to be the result of a defect of ear, though he is by no means deaf, quite as much as the result of a defect of tongue or palate. Some of his misspellings are 'sunderelents' for 'sundry rents,' 'compreated' for 'complicated,' 'laserlacions' for 'lacerations.'

The writer points out that a want of power to distinguish vowel-sounds is quite as likely to be the cause of bad spelling in common words as carelessness amounting to *malice prepense*, or a weakness in the machinery which connects the movements of the hand with the orders of the ear. He continues, "We might have expected, that, on the analogy of color-blindness, vowel-sounds would be more likely to be confused than consonant-sounds. So far as my present experiments have gone, I infer that the inability to distinguish consonants is as common as a want of discrimination between vowels.

"The confusion caused by explosive consonants is, however, more remarkable than that from vowels; the inexperienced ear which is dull at catching consonants is capable of any distortion of sounds. To illustrate this, an experiment was tried with a class of eleven boys, averaging ten and a half years of age, and all able to read fluently, one or two of them being somewhat extensive readers. Some short ordinary words were selected, which nearly all got right, and then words specially to test the power of hearing, some of which, it was hoped, the subjects of the experiment had never heard before. Here are the variations of five words (the Italicized vowels show interchange in the hard-vowel scale):—

	different	capable	ultramarine	spectroscope	Epaminondas
1.	dirfr*e*a*n*t	capbul	ultr*e*mean	sp*a*ccrow	*a*pnonas
2.	different		ultramarine	specorourscope	aparmondas
3.	diferent	capeperbul	altrermerine	speckshow	aponedondas
4.	diferrent	capperble	altrermerein	speckros-cop	achappynomeen
5.	difer*a*nt	cam*e*ble	oltr*e*mer	spkerrope	*a*ppanandex
6.	drifrent	capable	untummerrein	specteroskop	eupameondeous
7.	diffrent	capabybely	ultriean	spesptrocope	emeandass
8.	drifent	capebibel	ultrenn	spectuscope	epermondes
9.	different	capebale	ultermeriem	specktrocope	apporymondas
10.	differ*a*nt	ackable	ult*o*marien	spreting	*a*panenondes
11.	differint	caperble	ultrumeree	spatroscope	appongamanges

"The room was a small one, and the words slowly pronounced twice, each word being written immediately after it had been read out. The majority of these boys are unusually intelligent. The worst speller but one recited, soon after his eighth birthday, 'The Battle of the Lake Regillus.'

"Twenty words in all were read out. Among them were 'yellow,' which all got right; 'instance,' five right, one of the best readers giving 'insentsess;' 'aniline,' of which there appeared these variations, 'haniyne,' 'anileling,' 'anelile,' 'animiene,' 'aleline,' the rest being at any rate phonetically correct.

"In the majority of these misspellings we at once detect want of experience in the use of the arbitrary connection between signs and sounds, and feel confident of improvement in course of time; but when we find a particular phonetic mistake frequently recurring, such as the substitution of *l* for *n* in 'aniline,' we suspect some defect either in the writer or dictator; and if the possibility of mispronunciation in the reader is eliminated, then we have to look for defect of ear or hand, or both, in the writer. Supposing that in correcting the misspellings we find that one or two subjects cannot recognize a word after the correct spelling has been shown them, while others have no difficulty, we must conclude that the ear is at fault, in the one or two; and if we find that the same individuals can recognize some sounds and not others, then the phenomenon of sound-blindness is established, and we have a satisfactory reason for the fact that some persons seem to spell naturally, while others never learn; as, indeed, how should a man learn to spell even phonetically to whom not only the printed sign, but also the distinction of sounds, is arbitrary and conventional? and how should he not learn whose ear is a torturing conscience? Sound-blindness will account for dialectic variations. The ear being, as physiologists tell us, an even more delicate and complex structure than the eye, we can understand that the physical conditions of certain localities may produce insensibility to particular variations of sound. Perhaps the interminable rattle of London may account for the awful vowel-system of commercial men in the metropolis."

ETHNOLOGY.

American Languages.

IN the Proceedings of the Canadian Institute, Toronto, October, 1887, Mr. A. F. Chamberlain discusses the relation of American and Asiatic languages in connection with the question of the origin of the Indians. The concluding remarks of his article are so judicious that we wish to repeat them here: "The case for the eastern Asiatic origin of the American peoples rests too much upon apparent phonetic resemblances. Before any (phonetic) law like that of Grimm can be discovered and demonstrated between the American and related linguistic families, a thorough understanding of the relations which exist between the individual members of each branch of the American stock is requisite and of paramount importance." But we believe that an application of such principles to Chamberlain's own remarks will show that they are not well founded.

The author first discusses the Eskimo dialects, and gives a brief comparative vocabulary of different tribes in order to show their similarity. The words contained in this table are not taken from the best originals, and, besides, words of different meaning are compared. What the author considers as differences of dialect must in many cases be ascribed to a difference of the grammatical forms, or to the nationality of the collector. As his material is of so little value, the comparative Eskimo-Turanian vocabulary cannot be considered a good proof for his opinion that the American and Turanian languages have a common origin. We cannot consider the similarities of sound between the two groups other than fortuitous. There is another point of view in the paper which we cannot accept. Chamberlain uses the migration legends as a proof of earliest migrations. To a certain extent this may be right, but it is well known, that, if a tribe changes its seat, its legends are attached to new localities, and for this reason no conclusion on the migrations in a very remote period can be made from such facts. The migration of legends among aboriginal tribes is a problem of great difficulty, and one in which rash conclusions ought not to be made. The study of European folk-lore has shown that the origin of legends and their migrations are often wonderful, and that the most painstaking care must be taken in dealing with this subject. These considerations prevent us from accepting Chamberlain's theories as superior to those propounded by other authors. Our knowledge of American and North Asiatic ethnology and philology has not yet arrived at that stage in which we can deal satisfactorily with the question discussed by Chamberlain.

ETHNOGRAPHICAL MUSEUMS. — Dr. Kristian Bahnson publishes an interesting account of his thorough study of the principal European ethnographical museums ('Ethnografiske Museer i Udlandet,' in *Aarböger for nord. Oldk. og Historie*). His concluding remarks are of particular interest, as they refer to the much-discussed question of museum arrangement. He shows that the arrangement according to objects has gradually been abandoned by all museums, and that the ethnological method, i.e., the arrangement according to tribes, has been adopted in its stead. He says about the former, the sociological plan, "The plan as a whole is absolutely wrong, in the first place, because those groups which ought to be the principal divisions in an ethnological museum, are made subdivisions. The ethnic individuality, which is a whole, is decomposed into a great number of elements. By an arrangement according to the character and purpose, the objects are taken out of their natural place, and they want the environment, which alone can explain their real meaning. In each stage of civilization there is a deep connection between the several ethnological peculiarities