

disagreements among the heads of the city government have exercised no small influence in the cessation of small jobs, which employed men by the fives and hundreds. Taking, then, the ratio of decrease as above noted, and applying it to minor operations, a total of ten thousand men are shown to be out of employ—fully one third of the unskilled laboring population. These are the day laborers, who work, by the score or more, under contractors.

Turning next to the manufactories, we find a class of men who are not connected with the industry as pursuers of the game. They are not mechanics, nor do they fulfil such special functions as the teamsters or porters. They are mere workers, using their muscles at whatever job they are set to perform. Of these 8,000 are idle, for, from the 7,624 establishments about New York, they were the first to be discharged, and so added to the roll of the unskilled unemployed.

From careful investigation it further appears that, on each able bodied man of the class of society to which these people belong, no less than four persons are dependent. Hence there has been added to the pauper population not merely 18,000 men, but five times that total, or 90,000 souls, and this in November. Compare this aggregate with that of February of the present year—the closing month of winter, when the drain upon the public and private charities is always greatest. Then the total was 80,000; now, at the opening of winter, the figures are 10,000 higher. With regard to wages, in all departments of skilled labor and in all factories the standard has been maintained, with a few isolated exceptions. In coarse and unskilled labor, the reverse is the case. Up to the panic, the usual rates were \$2 per day, or \$12 per week; at the present time, very few contractors are paying over \$1.50 per day. The Italian laborers are getting but \$1.25; and railroad contractors in adjoining States are paying that sum, and picking men beside. The comparison between this state of affairs and that of fourteen months ago is a striking one. The payroll then was: 30,000 laborers at \$2, \$60,000; 8,000 laborers employed by factories, etc., \$16,000; total, \$76,000. The payroll now is 4,000 laborers on city work at \$1.75, 7,000; 16,000 laborers on private enterprise at \$1.50, \$24,000; total, 31,000. Difference between 1873 and 1874, 45,000. Average share then to each man, \$2; now, 67 cents.

It is a fact that the necessities of life are not a whit less costly now than they were a year ago, so far as the poor man is concerned. The wholesale dealer buys his goods in gross, perhaps, cheaper; but the retailer, with lessening sales to contend with, has no reason to reduce his prices. In rent, a week's wages generally pays for one month; but this relation was adjusted before wages were cut down, so that, to provide shelter for himself and family, the working man pays not twenty-five per cent of his earnings, but fully thirty-one per cent. Coal is dearer than a year ago; if it remains at ruling rates, and counting the consumption in each family of five persons at seven pauls per week, fifteen per cent of wages after the rent is paid must be devoted to its purchase; and thus we might continue through the necessities of life, showing that not merely is utter pauperism staring the unemployed in the face, but even those who look to their day's work for their day's living are menaced with privations and suffering.

One result of this condition is beginning to be apparent in the diminution of immigrants from Europe, and the remarkable increase in steerage passengers leaving this country, avowedly to seek labor in England. Five hundred souls left this port in an Italian steamer a week or two ago, and on one Saturday 2,000 working people sailed for Great Britain, Germany, and France. This is a bad showing, and raises questions relative to the existing tariff and the national finance, which the coming Congress must take into very serious consideration. The immediate relief is in the hands of the charitable. Public institutions are destined to be taxed far beyond their capabilities, and private charity will be called upon within the next six months as never, we think before. Provision for meeting the outcry for food should begin at once, not delayed until the sad tales of starvation and misery fill the police reports.

It is, moreover, a serious question for capitalists and moneyed institutions to reflect upon, whether they would not serve their own ends of gain best at this time by giving these thousands of idle men the means of helping themselves. It is certain that a large number of deserving poor are, within a few months, to be thrown as a charge upon the city and county. They must be supported, and that in idleness, since, as we have already said, municipal employment offers no opening whatever. Would it not be wiser for some of our great moneyed institutions to put out some of their money in aid of desirable local enterprises which will give the workmen employment? We can think of no better example than the case of the Broadway Underground Railway. The road is a direct continuation down town of the tracks of the splendid Underground Railway on Fourth avenue, and the approaching completion of the latter marks not only the feasibility and advantages of such a route within corporate limits, but also suggests the present as the best period for proceeding with the work. The plans of the route are complete, are approved by the best engineers, legislative sanction has been accorded to the project, and nothing remains but the acquisition of capital sufficient to initiate operations. A source of labor will thus be opened during the winter for eight or ten thousand men, and forty thousand people, near by half of the total number of unemployed, will be furnished with a means of sustenance. As an investment, a first mortgage on a line through the very heart of the city, none better exists. In fine, it would be difficult to conceive of any other project now extant, capable of offer-

ing three such great benefits as work to the unemployed, relief to a population earnestly seeking a means of rapid transit, and a safe investment for capital contributed to its promotion.

#### THE SENSATION OF PAIN IN THE LOWER ANIMALS.

Does the insect, which we thoughtlessly crush under foot, suffer as much pain as we should were we similarly destroyed? It is generally conceded that the proper answer to the question is in the negative; and in fact it would seem much more in accordance with the wisdom displayed throughout the creation of animated nature, that those beings which from their very essentials are subject to wholesale destruction should be spared the pangs incident to the throes of dissolution. No one, except perhaps that most refined of humanitarians who had scruples about drinking water on account of the sufferings he might cause to the animalcule therein, supposes that any real sensation of agony is experienced by the zoöphyte which we tear from the rock, or by the oyster as we cut it from its shell; but there are many who contemplate the sport of the angler with horror, and who see, in the writhings of the worm on his hook or in the struggles of his finny victim, all the tortures of human mutilation. Where then, at what particular class of being, is the dividing line to be drawn? Are only radiates and mollusks apathetic to dismemberment, or do they also experience sensation, and how far in the ascending scale does the insensibility to pain extend in its decreasing ratio?

It seems to us, and we have no doubt biological fact will bear us out in the view, that the accidental influences of cultivation, of breed, of education in human beings, and also of differences in delicacy of nervous organization, play an important part in determining the degree of suffering. It is well known that a savage will bear pain, not merely in absolute stoicism but apparently unmindfully, which if inflicted on a refined and cultivated individual would produce death or syncope. And this is not merely confined to the barbarian but extends through all grades of society. Physicians state that the sufferings of childbirth are as nothing to the squaw, or to the woman who constantly performs coarse manual labor, when compared with those of the delicate females of our upper classes. The same general rule applies to the lower animals; a finely bred horse winces under a lash that the dray brute would not notice, and the trained hound will yelp at a blow of which a street cur would think nothing. With this distinction in varieties of species before us on one hand, and the fact that both reason and general belief point to the insensibility of lower animals on the other, we are brought to the consideration of an interesting argument, raised by Dr. Crosby of this city, in defence of the practice of vivisection. It is advanced, as a generally received proposition, that the sense of pain is designed for the self preservation of all animals, and further that each is endowed with this sense to an extent only sufficient to ensure the result. That is, in other words, that an insect, for example, has a sufficient sense of suffering to keep him from walking on a hot coal; but if we threw him into the fire, his agony would be comparatively nothing as compared to that of some higher animal in whom the sense of pain is implanted for a greater and more complicated variety of purposes.

It is very difficult, almost impossible, to judge of the existence of pain in an animal by its mere physical contortion. A human being under the influence of ether, during an operation, often writhes and screams as if in great torture, and yet nothing is felt; similarly people in convulsions show every external sign of suffering, and yet, beyond mere muscular soreness due to exertion, none is present. Nor is the cry a proof of pain, for, as Dr. Crosby says, a pig will yell just as lustily, if he be merely held as he will under the infliction of a severe wound. We may judge, however, with greater security, from coincident actions on the part of the creature, as to whether suffering is or is not present. If a man, for example, while undergoing a surgical operation, should, as in a case we once saw, coolly ask the surgeon, and complacently munch an apple while the knife was penetrating his flesh, ordinary reason would lead us to the belief that his assertion that "it did not hurt" was true, and this even did dumbness prevent his stating the fact. If such be true in the one case, and in that of the animal which we know to be most acutely sensible, then it is logically true in the instances of lower orders which we are sure possess sensibility in a less degree; and hence if a horse, as in one of the cases cited by Dr. Crosby, have a fore leg shot off in battle, and thirty-six hours afterward be found quietly grazing, although the stump is horribly mutilated, then it is reasonably certain that the pain is not proportionate to the lesion, if indeed present in any degree whatever.

It is well known that animals often inflict on themselves injuries which apparently must cause suffering, and yet every indication proves the same to be absent. Rabbits have torn themselves free from traps, and been found feeding minus two legs. Rats when pressed by hunger will eat their own tails. We have seen pigs, after their throats have been cut, cease their cries and attempt to eat, and it is said that the same animals when stuck unawares often pay no apparent attention to the wound. It is curious also to notice that rabbits and rats, which can support themselves even if their locomotive process be injured, will bite off their feet if caught in traps, but that a carnivorous animal like the fox will never do so, for, once unable to run, he would starve to death. In the first case there appears to be no sense of pain to prevent the action; in the second, the sense certainly exists.

Again, crabs and lobsters drop their claws when frightened, and seemed unhurt. There is a little lizard in Sicily, which, when suddenly alarmed by the blow of a cane on the rock

near to it, will break off from its tail and scuttle away, running into obstacles in its path acting very like a ship without a rudder. Sir Humphrey Davy came to the conclusion that in fishes the sensation of pain was very trifling and the view seems proved when it is considered how infinitesimal the number of fishes which arrive at maturity is, compared to the myriads of eggs deposited.

A wasp will eat after it is cut in two; so will a dragon fly when impaled; and that the insects should suffer to any degree seems on its face impossible, particularly if the millions and millions which the birds eat be thought upon.

There is besides a very curious provision of Nature which is little understood, and which comes into play, it would appear, in all animals in the presence of imminent destruction or in cases where great pain presumably exists, either to be inflicted by a natural enemy. We allude to the action of a mouse when in the power of a cat, or of a rabbit when seized by a weasel. In the last instance the rabbit remains motionless, without a sign of pain while being killed; he is apparently, as the expression is, "paralyzed by fear." So also a mouse, and precisely so with man, for Dr. Livingstone's description of his sensations while being shaken by a lion exactly accords with such as we might imagine would be the experience of the mouse, when in the claws of the cat.

But while there is every evidence that the suffering of the lower animals is certainly less than that of man under similar circumstances, we cannot, however, coincide with the idea that it is so far absent, in the case of the brutes ordinarily sacrificed by vivisection, as Dr. Crosby seems to convey. As he states, however, an æsthetic disposes of the question at once; and in general it is much more humane (and besides is an error on the safer side) to give the unfortunate beasts the benefit of the ether, as well as that of the doubt as to their sensibility.

#### Straw Lightning Rods.

The *Journal of the Society of Arts*, London, and other papers have given currency to a statement, derived from a prominent French paper, to the effect that lightning rods made of straw had been used in France, and found quite as effective for protection as metal rods, and far cheaper. President Henry Morton, of the Stevens Institute, has written an interesting reply to this statement, given in another column, in which he shows the utter absurdity of the straw lightning rods, and also takes occasion to point out in a very clear and satisfactory manner, what kind of a rod is necessary to ensure protection, how it should be arranged upon the building, etc. This article will, we are confident, be studied with interest by all who are really desirous of possessing correct information upon the subject.

#### SCIENTIFIC AND PRACTICAL INFORMATION.

##### FALL SICKNESS.

In a lengthy article on the above subject, Dr. Hall concludes that if persons in the country where intermittent fevers prevail would adopt the precaution, in early fall, to take their breakfast before going out of doors, and keep a blazing fire upon the hearth in the living room during the morning and evening, fevers and chills would almost entirely disappear as a prevailing disease.

The importance of ridding apartments of the dampness and sharpness of the morning and evening air, and the expulsion of all miasmatic particles, cannot be over estimated by those who would have good health.

##### THE FRENCH AND ENGLISH TUNNEL.

The project for the tunnel under the English channel has been officially transmitted from the French Government to the English Foreign Office. Among other plans, it is suggested that the means of inundating the entire bore should be placed in the hands of each government, so that, in case of war breaking out between the two countries, the work may be rendered useless. It is calculated that a force of 2,000 horse power, operating for two months, would be sufficient to pump the water out of the tunnel.

##### A NEW WHITE ALLOY.

This metal, recently invented by M. Delalot, is said to be very cheap, and to possess qualities rendering it suitable to replace the various white alloys now in use. The proportions are pure red copper 80 parts, oxide of manganese 2 parts, zinc 18 parts, and phosphate of lime 1 part. The copper is first melted and the manganese added little by little. When the latter is dissolved, the phosphate is similarly mingled. The scoria is removed and finally the zinc is added about ten minutes before casting. To accelerate the fusion of the manganese,  $\frac{1}{4}$  part fluoride of calcium,  $\frac{1}{4}$  part borax, and 1 part wood charcoal may be used as a flux.

THE Boston Board of Fire Commissioners, taught by the recent calamity at Fall River, have issued a circular calling the attention of persons who have on their premises apparatus for preventing the spread of fires, to the necessity of a regular inspection of and instruction and drill in the same. They advise that printed cards, explaining the construction, arrangement, and use of such appliances, be posted where they cannot fail to be seen, and that the occupants be drilled as often as once a week in the use. Where fire escapes are attached to buildings, the board recommend that they be frequently used and examined.

MR. THEODORE J. HARBACH, of Philadelphia, has designed and executed, for the great Centennial event, designs for medals, of a number of historic subjects, such as Old Independence Hall, the Old Cracked Liberty Bell, a Head of Washington, etc. On the obverse sides, persons can have their business cards, making a novel and durable advertisement, which the possessor is likely to keep.