BELFAST, MONDAY, NOVEMBER 19, 1866.

BELFAST NATURAL HISTORY AND PHILOSOPHICAL SOCIETY.

OPENING ADDRESS BY THE PRESIDENT.

WEDNESDAY evening, the opening public meeting for the current session of this society was held in the Museum, when Mr. Joseph J. Murphy, President of the Society, gave an introductory address on "Some Present Aspects of Science." Among those present were—Dr. Andrews, Vice-President of the Queen's College; Professor James Thomson, George C. Hyndman, Esq.; Dr. Browne, William Bottomley, Esq.; Robert M'Adam, Esq.; A. O'D. Taylor, Esq.; Nicholas W. Grimshaw, Esq.; John W. Browne, Esq., B.A., &c.

THE OPENING ADDRESS.

The PRESIDENT then read the opening address, as follows:—As you have done me the unexpected honour of electing me as your president for this session, it becomes my duty to open the session with some appropriate remarks, and, instead of addressing myself to any special subject, I prefer to make this the occasion of some general observations on the latest results of science, and on the present aspect of the most interesting of its unsolved problems. The great idea of all modern science is the unity of plan and of law that runs through all creation, and makes itself manifest to the scientific explorer under the most diverse external forms. Laws which were thought to be quite unconnected are found to be really the same law, acting under different circumstances; and phenomena which were supposed to have different causes are found to be really effects of the same cause. The first discovery of this kind, and probably the most important of all, was that made by Newton, in proving that the force which binds the planets in their orbits is no other than that which makes a stone fall to the earth. By this magnificent generalisation he showed that the laws of nature, at least in so far as respects motion and gravitation, are the same throughout all space. And since the beginning of the present century it has been proved that heat is really motion—the motion of atoms; so that the laws of motion, which were first proved true of masses, are equally true of atoms as of masses. By this generalisation, second in importance only to Newton's, it is shown that those fundamental laws of nature which are called the laws of motion and force are equally true on all scales, from a star to an atom. The same tendency to identify principles as essentially the same which were supposed to be distinct is to be most emphatically asserted of geology. The change which has transformed geology from a mere mass of unproved conjectures into a true science essentially consists in referring geological phenomena to the same causes as those which we now see in operation. The revolution wrought by Lyell and his fellow-workers in geology is an exact parallel to that wrought by Newton in astronomy. Before Newton's time, the celestial forces were generally believed to be totally unlike the terrestrial ones. Newton showed that they were the same. Before Lyell's time, geological phenomena were usually referred to imaginary catastrophes, convulsions, cataclysms, or deluges, of a kind unlike anything now seen in operation. Lyell has shown how to account for them by the slow and continued action of the same causes with which we are familiar. These remarks may be summed up by saying that astronomy has shown the uniformity of the laws of nature through all space, and geology through all time, while the science of heat, and I may add those of electricity and light, show the uniformity of the laws of nature on all scales. The laws of nature are unchanged through time. This is the great truth of geology, and is doubted by none who have verified the evidence. But what are we to infer from this? In what sense is it true? Does science make it conceivable that the universe has continued in nearly its present state through an eternal past, and will so continue through an eternal future? The facts of geology warrant no such inference. Laws may continue unchanged, and yet may produce constantly-changing results. For instance; the laws of life are fundamentally the same in every living being; yet geology has shown that species, and whole classes, of living beings have perished, while others have come into existence. But geology does not, and cannot, go back to any actual beginning of the order of things. All that geologists have recovered, or can hope ever to recover, is but a few of the latest leaves of the history of our planet. Fire and water have destroyed the rest. The question, whether the world had a beginning and will have an end, cannot be definitely answered by geology. But it is answered by another science. The discoveries respecting the nature of heat, which have made the science of heat a branch of the science of force, have proved that the present order of things is not eternal—has not continued from an eternal past, and cannot continue for an eternal future. The truth from which this inference is drawn may be more conveniently expressed for my present purpose by saying, that a finite space can only contain a finite quantity of force. To apply this to geology: We know that volcanic action—I do not mean eruptive action only, or chiefly, but subterranean action of all kinds—we know, I say, that volcanic action has had a most important share in producing geological changes. Now the earth, being of but finite magnitude, can contain but a finite quantity of volcanic force. Volcanic force, in fact, is subterranean heat; and this heat is constantly escaping in volcanic eruptions, in hot springs, and in other ways, and is radiated away into space. For this reason, I believe that, since the first formation of the earth, there has been a constant diminution in the intensity of volcanic force, although I admit that no direct geological evidence of this has been found, or is likely to be found. And it is certain that the earth is tending, though with inconceivable slowness, to a state of things in which there will be no subterranean action to raise up the land, and, consequently, nothing to counteract the effect of the rain and the waves in washing down the land into the sea. The same is true of the heat of the sun. It is perfectly certain that the stock of heat now in the sun is finite, and will be exhausted in a finite time. There is, no doubt, good reason to think that the sun is receiving fresh supplies of heat from without, by the falling of meteors on his surface; and, in the infinity of space, there may be an infinite supply of such sources of heat. But all that we know of the solar system is altogether opposed to the belief that any such infinite supply can be brought in without a total subversion of its equilibrium. Now, as the sun's heat is necessary to life, and the action of volcanic heat is necessary to prevent the land from being levelled down into the sea, and as both of these are finite and exhaustible, and are actually undergoing exhaustion, we see that the order of the universe is tending to an end; and this is proof that it must have had a beginning. If it had a beginning, then it had a first cause; and, to use the cautious but conclusive words of Newton, "The first cause is certainly not mechanical." In other words, matter and force had their origin in creative power, and we know by science, what formerly belonged to faith, that "the things which are seen were not made of things which do appear." I have till now been speaking only of established truths. I now go on to speak of questions which are at present, and may long continue to be, matters of eager controversy. What is the relation of life to matter? Is there any distinct vital force? Has life been produced by the action of matter on matter, as heat and electricity are produced? or is the origin of life, like the origin of matter and force, to be referred to creative power alone? On this subject I must begin with a few words of very necessary verbal explanation. When I am asked if I believe in the existence of a distinct vital force, I reply that I do; and I cannot attach any meaning to the denial of it. We see that the phenomena manifested by living beings are in many respects altogether unlike those of dead matter. These vital phenomena must have some cause; we do not know what that cause is, but we need a name for it, and *vital force* is as good a name as any other. But, though we do not and cannot know what it is, we can safely assert that it is something more than a mere resultant from the physical and chemical forces. I consequently define the vital force as that "unknown something, over and above the ordinary properties of matter, which is the cause of the peculiar properties of living beings." But we must be careful not to let slip any assertion as to matters of fact into our reasonings, in the disguise of a definition; and I freely admit that all questions concerning the origin of life are questions of fact, and, like any other questions of fact, are to be settled, not by reasoning, but by observation and experiment. Many careful experiments have been made during the last few years, with the view of ascertaining whether it is possible for life to originate in chemical actions alone; and some experimentalists assert that they have succeeded in obtaining the simplest microscopic living beings in such a way. But the preponderance of evidence is, at least at present, in favour of the belief that, in all those cases where microscopic animals or vegetables appear to be produced by chemical action alone, they have been really produced from previously-existing eggs or seeds, which the fermentation or other chemical action did not produce, but only caused to germinate; for we know that such eggs and seeds are so widely distributed that every handful of dust is full of them, and so minute that they can never be sifted or washed out. But even if it can be shown that the lowest and simplest forms of life can be produced by a chemical process—and I do not make any assertion as to whether this is possible or not—still, as has been lately remarked, this would prove nothing at all as to the original beginning of life; for the chemical actions in which the lowest forms of life are said to originate all consist in the decomposition of vegetable or animal substances. Now, if it can be shown that the lowest forms of life can be generated, not from mere dead matter, but from the decomposing bodies of the higher forms, it is evident that this brings us no nearer than we were before to any absolute beginning of life. We, therefore, rest in the conclusion that life, like matter and force, has had its origin, most probably not in any secondary cause, but in the direct action of creative power. Another question now arises. Myriads, perhaps millions, of living species, vegetable and animal, exist, or have existed (all of similar nature, yet differing all from each other). How are these related to each other? This is the much-discussed question of the origin of species: it is a totally distinct question from that of the origin of life, concerning which I have just now been speaking. Darwin, who is the ablest as well as the best known advocate of the theory of the derivation of all living beings from a few original germs, by a purely physical process, has signified his belief that the communication of life to those germs was no mere chemical process, but an act of creative power. We may set aside as out of the question any notion of the origin of highly organised species by a merely chemical process. Those who most firmly believe that a chemical process may originate the simplest and lowest microscopic forms of life are also fully convinced that it can originate no others. All notions about mice bred out of the mud of the Nile, or flies out of the body of a dead bullock, have long been abandoned by all except the most ignorant. There are, then, only two possible hypotheses. Either every species has been created, as we see it existing, or it has been derived by descent from some other more lowly organised species, which has probably ceased to exist, and this again from another, and so on back to the original germ. No doubt, any number of intermediate hypotheses might be framed, imagining separate ancestors for every genus, every order, every class, and so on. But in point of fact no one does attempt these compromises. It appears to be generally agreed that, if we admit the theory of "modification by descent" at all, there is nothing improbable in the extremest form of the theory—namely, that all living beings, vegetable and animal, are descended, possibly from one, certainly from a small number, of very simply-organised original germs. This theory, certainly, does not at first sight look plausible. To any intelligent but uninstructed person it will appear far more likely that every species has been created as we see it. But in the sciences of life, as in geology, every increase of knowledge tends to prove that things were not originally created as we see them, but far otherwise. A hundred years ago there was nothing to hinder any intelligent man from believing that our whole terrestrial world, with its mountains, rivers, and seas, was created exactly as we see it. We now know this is not the case, and we have also learned that whole classes of animals have ceased to live, while their places have been taken by others. And, what is very significant, the classes which have taken the places of the extinct ones are mostly of higher organisation, so that geological history, on the whole, tells of an advance in the character of the forms of life on the earth. Thus, to mention the most conspicuous instance: the cold-blooded reptiles have to a great extent perished from both sea and land, while their places have been taken by warm-blooded animals. I admit, however, that the geological record is too imperfect ever to throw much light on the question of the origin of species. I only say that what evidence geology furnishes is in favour of the theory of the origin of species by descent with modification. The strongest arguments in favour of this theory, however, are drawn from the facts of comparative anatomy and of development. To speak first of the facts of development: we know that every living being in existence, whether vegetable or animal, has been developed out of a germ which had no resemblance whatever to what it afterwards became, which was without organisation or structure, or any vital property except the capacity of acquiring vital properties. When this marvellous transformation—so far transcending anything that magnetism, chemistry, or crystallisation can account for—takes place in the biography of every living individual, there is surely nothing contrary to the nature of things in the theory that the same is true of the history of every species. In other words, we know that every individual has been developed out of a simple, unorganised germ; and we may, therefore, believe that every species has been descended from a simple, unorganised, or lowly organised ancestor. It is to be observed that the germs of all beings are much alike; those of totally unlike species present no character whatever, either chemical or microscopic, by which they can be distinguished. Moreover, the higher animals, in the course of their development, assume temporary forms which are similar to the permanent forms of species of a lower grade. This, I believe, is universal. The best instances are those in which the animal undergoes metamorphosis. Thus the butterfly is at first a caterpillar, which resembles the centipede—a lower form of the same great class; and the frog is at first a tadpole, which is essentially a fish—that is to say, an animal constructed on the same general plan as the frog, but of lower organisation. But what the facts of development only suggest as a presumption is raised into a strong probability by those of comparative anatomy. In the great vertebrated class, for instance, a gradation can be traced, with hardly any interruption, from the lowest worm-like fishes to the highest air-breathing reptiles; and the gradation of the different orders in that series presents a remarkable general parallel to the series of forms successively assumed by one of its higher species in the course of its development. It is true there are not such connected series in all parts of the animal and vegetable kingdoms. But the more we know the more connexion we find, and the fewer gaps are left. Geology has not made known a single extinct form totally unlike those now living, but has discovered many that fill up gaps in the existing series. Until geological discovery began, the class of birds appeared perfectly isolated from all others; but geologists have now reason to believe in the former existence of an entire class connecting the birds with the reptiles. There are, however, some classes between which no gradation, no direct connecting link, has been found, or appears conceivable. We certainly shall never find, for instance, any intermediate form between the insect and the vertebrate. But neither, on the theory, ought we to expect any. There is a gradation between the insects and the worms through the centipedes—a gradation with some missing links, perhaps, but certainly a gradation—and there is a gradation between the vertebrates and the worms, through some of the lowest fishes. From the theory of the origin of species by descent with modification, consequently we infer that insects on the one side, and vertebrates on the other, are descended from worms, and we do not expect to find any intermediate group between insects and vertebrates, except in so far as the worms can be called so. It is important also to remark that gaps between species, as well as between classes, are gradually filling up in the progress of knowledge. Intermediate varieties are constantly discovered. The argument may be thus briefly summed up. We know that every individual in the course of its development presents a series of forms each more highly organised than the previous ones. This raises a presumption that such has been the course of the origin of each species—that it is descended from a succession of species, which have been constantly, though slowly, rising in grade of organisation. And this presumption is almost indefinitely strengthened by the discovery that, so far as our knowledge enables us to assert, there is, or has been, just such a gradation between species and between classes as the theory demands. I have now given a very bare outline of the theory, and have no time to state various collateral arguments in its favour. I must, however, mention one, which is, to my mind, the strongest of all, and is certainly the most easily understood. I mean the existence of what are called rudimentary or aborted organs—such as the leg bones of some serpents, which do not appear outside the skin, and are of no use to their owners, and the wing-bones of that extraordinary bird, the apteryx, which has no external wings. It is impossible to believe that animals were created with useless members. We might as reasonably suppose that rocks were created with fossil shells and bones in them, but we may reasonably believe that serpents are descended from animals that had legs, and that the apteryx is descended from a bird that had wings. But how was this change brought about? This is the real difficulty. I believe that the theory of the origin of species by descent with modification is as nearly proved as a theory can hope to be for which direct evidence is not to be had. But I believe that as yet all attempts to explain the cause of the changes or the law of the modifications have failed; and I am not sanguine that any will ever succeed. If I go on to make some further remarks on this subject, it is not so much to attempt to clear it up as to show why it must ever remain a mystery. But the origin of species is not a greater mystery than the perpetuation of species. All life is mysterious; and if it is true, as I believe, that air-breathing vertebrates have been descended from fishes, and fishes from worms, this is not really a more mysterious process than that which is repeated in the development of every single animal. But I must refer to the remarkable and very able attempt lately made by Darwin to account for the origin of species out of a few original germs by means of a purely physical process, in order to state how far I agree with it, and why I regard it as, on the whole, an utterly insufficient answer to the great question of the origin of species. Darwin's theory has this great merit—that it takes nothing for granted but what is so perfectly well ascertained as to be disputed by none. He starts with these two truths—that no species is absolutely uniform in its characteristics, but individuals of the same species differ from each other to a perceptible, and sometimes a considerable, extent, and that all characteristics whatever tend to become hereditary. For instances of these truths I need only refer to that best known of all animals, the dog. No two dogs are precisely alike, and the characteristics of particular dogs as to size, form, colour, and instincts, are on the whole usually transmitted to the offspring, though with variations. The truth that characteristics tend to become hereditary is one on which there is little more to be said. With respect to variation, I may remark what Darwin has either not noticed, or has not brought into sufficient prominence, that there is a good deal of reason for believing mixed races to be more variable than pure ones; and also for believing that when any species or race is brought under new conditions of life, as by a change of food or a change of climate, if the change is not so great as to destroy the health and ultimately the life of the race, the variableness of the race, and its tendency to produce individuals and secondary races with new characters, will increase; and this increased variableness will continue for an indefinite time. In all this is nothing original. But what Darwin was the first to point out is, that when any variation takes place of any kind that is favourable to the life of the individual, that individual will have a better chance of living than other individuals, and will most probably survive, and transmit its favourable peculiarity to its descendants. For instance, among dogs in the wild state, the swiftest will find it easier than others to obtain food, and, consequently, will have a better chance than others of surviving, and of transmitting its swiftness to its descendants. And the improvement will go on accumulating; the swiftest dogs of the swiftest breeds will be the survivors, and will transmit to their descendants a constantly, though very slowly, increasing swiftness. It is, no doubt, by such a process as this that the greyhound variety of the dog has been formed. And it is evident that the same process may be applied to other qualities than that of swiftness. Keenness of scent is as useful to a wild dog as swiftness, in enabling him to obtain prey. A dog that excels other dogs in scent, as well as a dog that excels other dogs in swiftness, has a better chance of getting a living, and of transmitting his keen scent to his descendants. In this way, no doubt, have originated the breeds of dogs that hunt by scent. It is to be remarked, that although it is possible, it is by the law of probabilities very unlikely, that the same dogs should excel in both swiftness and scent; and, consequently, very unlikely that a breed of dogs excelling in swiftness and scent at once, should come into existence. This, then, is Darwin's celebrated theory of natural selection. I have shown that I believe in it to a considerable extent. I believe it will account for much. How much, I do not venture any opinion. But I go on to say what I think it will, demonstrably, not account for. I can conceive almost any improvement being made in this way in any single organ. But how can such a process originate any complex organ like the eye or ear? I have just remarked, in speaking of dogs, that all probability is against two favourable variations occurring at once. Now, to give origin to such an organ as the eye, one favourable variation is not enough: there must be a concurrence of several. To form the eye of one of the higher animals is needed a well expanded and sensitive retina, an elaborate optical apparatus consisting of, I believe, three distinct parts—the black pigment that prevents any confusion arising from reflexion of light within the eye; a moveable eyeball; moveable eyelids; and an iris which expands or contracts with diminished or increased light, with its nervous connexions, which are two—one for contracting, which has its root in the brain, and one for expanding, which has its root in the sympathetic ganglia. Here is a considerable number of parts and connexions, every one of which would be useless without all the rest, and every one of which, consequently, pre-supposes all the rest. I do not deny that the eye and every other organ have probably come into existence by a process of gradual improvement. But I say that mere spontaneous variation, and the preservation and transmission to descendants of favourable variations, with indefinite improvement on these through successive ages, will never account for the origin of the complex perfection of such an organ as the eye. The improbability of such a supposition admits of mathematical statement. Suppose, what is, I think, a very favourable supposition for the theory, that a favourable variation, of whatever kind, may be expected to occur once in every thousand animals that reach maturity, so that the expression of its probability is one in a thousand. And suppose, what is probably no exaggeration, that, in order to improve such an organ as the eye at all, it must be improved in ten different ways at once; then, in virtue of the law of probabilities, in common language, the chances against the improvement occurring are represented by one followed by thirty ciphers, a number incomparably greater than the number of seconds that have passed by since the beginning of historical time. In fact the improbability of any complex organ being produced and brought to perfection in any such way is an improbability of the same kind and degree as the improbability of producing a poem or a mathematical demonstration by throwing letters at random on a table. It would not be impossible, in the strictest sense of the word impossible, to produce a poem or a mathematical demonstration in such a way. It would contradict no law of nature were it done, but it is so improbable as to be, for all practical purposes, equivalent to an impossibility. I, therefore, conclude that the adaptation of one part of an organ to another, of each organ in an animal's body to the other organs, and of all to the world in which the animal has to live, are to be accounted for by no merely physical process, but are to be directly referred to creative wisdom. As matter and force are to be directly referred to creative power, so the relation of means to purpose that we see in living beings are to be directly referred to creative wisdom. I do not advance this conclusion as a new discovery. On the contrary, it is older than science, but I believe that science confirms it. It has been truly remarked that the origins of all things are concealed from us. We have never witnessed, nor can we ever witness, the origin of matter, of force, of life, or of mind. Yet science raises these questions, and shows why and in what sense they are insoluble. And these bring us to the borders of a region to which science can only point the way, and which it is the exclusive privilege of faith to enter.

Mr. A. O'D. TAYLOR (secretary) said he believed it was contrary to etiquette to have any discussion on the address of the president, but Mr. Murphy would be glad to reply to any remarks that might be made.

Dr. BROWNE said he did not intend to criticise the address, which had opened up a wide field for speculation. They must all feel deeply gratified by the paper, and grateful to Mr. Murphy for the clear elucidation he had given of the matter, so far as he had gone; and while it was not etiquette to make any remarks on the paper, it was within the bounds of etiquette to convey to Mr. Murphy their warmest thanks for the able paper he had submitted to the society. (Hear.) The field that had been opened up was one of vast interest, and one that would require centuries to develop. At the same time they should develop it as far as they could, and Mr. Murphy had laid a fair foundation for entering on discussions of great importance to thinking beings. He begged, through the secretary, to convey the thanks of the meeting to Mr. Murphy for the very able address he had delivered that evening. (Applause.)

The meeting then separated.

VISITATION OF THE BISHOP OF MEATH.—The primary visitation of the Lord Bishop of Meath was held on Wednesday last, 14th inst., in the Parochial Church of Mullingar. Immediately after the conclusion of the Litany, his lordship commenced his charge, the delivery of which occupied upwards of an hour. In alluding to Ritualism, his lordship said that it had involved the Church in England in many and sore troubles, and it was to be feared that the protests of the bishops would be found useless. The zeal of some ministers had led them into the adoption of extraordinary courses, calculated to estrange the people from the Church. Should it be so? Should such practices continue? or should the rubric, under which they found, or thought they found, a sanction, remain unchanged? Many of the most pious, moderate men saw no objection to change. Forms of worship were, by many, acknowledged to be unimportant. But the difficulty of making such changes was the primary consideration. The Church, as represented in Convocation, could not make those changes. They could be made only by Parliament and the Crown; and might they not thus lead to other and worse changes? He did not think the danger so great as many supposed, but in the present state of religious feeling he thought it wiser not to go to Parliament on the subject of change. Should the advocates of Ritualism succeed in disseminating their practices and doctrines, it would cause a revolt of the laity, and in proof of this he would only quote the words of the Archbishop of Dublin. "The laity of England (said his grace) would not prove patient while seeing all they had gained by the Reformation taken from them." In this country the evil had made but slight progress, and he thought there was no danger of its being otherwise. "In the presence of the reality," said his lordship, "we are safe from poor, mean imitations of the gaudy pageantry of the Church of Rome." At the same time, he observed that the absence of a decent and becoming ceremonial, being felt to be objectionable, furnished an excuse for the introduction of Ritualistic practices; he would, therefore, earnestly recommend a careful observance of the decencies of public worship. The attendance of the clergy was numerous.—*Daily Express*.

THE NONCONFORMISTS' ORGAN.—The *Nonconformist* states that last week arrangements were finally completed for the amalgamation of the *British Standard* and the *Patriot* newspapers. Dr. Campbell retires from the labours of editorship, and the amalgamated journals will receive a new title.

FALSE NOTES IN PIANOS.—Professor Page, of the United States, has recently investigated the cause of the jingle of certain notes on the pianoforte and other musical instruments, and has communicated the result to the *Scientific American*. Professor Page relates an instance of a new piano which had a jingling note, which for some time defied all efforts to discover the cause. Whilst one person continued to strike the offending note, another went about the room touching everything which could possibly be set in vibration. At last the cause was found to be in a clock on the mantelpiece. The striking part had run down, and upon winding it up the jingle ceased. In another case the cause was found to be due to two loose panes of glass in the windows. When the loose squares were wedged up the instrument gave a perfectly clear note, and on the removal of the wedges the jingle instantly recommenced. In some cases a slight change in the position of the piano will stop the noise, or transfer it to other notes. To account for this, Professor Page says—"It is probable that absolute unison is necessary to produce the sympathetic sounds to any notable degree, and that the motion of the instrument upon the floor produces a change of tension, either on or in something without the instrument, so as to affect the result." In case of annoyance from a jingling piano, it would be well, before condemning the instrument, to make careful search among the window panes, chimney ornaments, lamp shades, and other objects capable of being put into vibration. A few minutes will generally be sufficient to remedy the evil.

PRICES OF IRISH SHARES.

	Shares.	Paid.	Quotation.
Dublin 3 per cent. Consols			92½ " [illegible]
Do. account December			— " —
Do. new account			— " —
per cent. reduced			— " —
New 3 per cent. Stock			87½ " —
Do. account December			— " —
Do. new account			— " —
IRISH BANKS.			
Bank of Ireland Stock	Stock.	£100	2[illegible] " —
Northern	£100	30	22 " —
Belfast	100	25	— " —
Do. new Shares	100	15	77½ " [illegible]
Ulster	10	2½	9½ " —
Provincial	100	25	41 " —
Do. new	10	All.	3 " —
Royal	50	10	[illegible] " —
Hibernian	[illegible]	[illegible]	[illegible]
National	50	30	68 " [illegible]
IRISH RAILWAYS.			
Belfast and Northern Counties	5	50	41½ " 42
Do. 4 per cent. preference	Stock.	100	— " —
Do. do. halves	25	25	— " —
Belfast and County Down	50	50	15½ " —
Do. 5 per cent. preference A shares	50	50	45 " —
Do. do. do. B share	10	10	— " —
Do. do. do. C share	15	15	— " —
Do. do. do. D share	25	25	— " —
Do. 4½ per cent. preference E shares	10	10	— " —
Cork and Bandon	50	50	11 " —
Cork, Blackrock, and Passage	20	20	[illegible] " —
Dublin and Belfast Junction	100	100	[illegible] " —
Dublin and Drogheda Stock	100	All.	81 " —
Dublin and Drogheda 4 per cent. guaranteed perpetual	Stock.	100	[illegible] " —
Dublin and Kingstown	100	100	187 " —
Dublin, Wicklow, and Wexford	100	100	44 " —
Great Southern and Western	Stock.	100	91½ " —
Do. (perpetual) 4 per cent.	Stock	100	91½ " —
Irish North-Western	20	All.	3 " —
Limerick and Ennis	25	25	— " —
Londonderry and Coleraine	25	25	— " —
Londonderry and Enniskillen	25	25	— " —
The Midland Great Western Railway and Royal Canal Company	100	100	51 " —
Newry and Armagh	10	9	— " —
Newry, Warrenpoint, & Rostrevor	20	25	— " —
Portadown, Dungannon, and Omagh (preference)	25	25	— " —
Ulster	50	50	39½ " 40
Ulster Extension	25	25	— " —
Do. Quarter Shares	12½	12½	— " —
Waterford and Kilkenny	Stock.	100	— " —
Waterford and Limerick	50	50	— " —
Do. (redeemable) Quarter	12½	All.	— " —
York Street Flax Spinning Company (Limited)	50	10	17½ " —
Northern Spinning and Weaving Company (Limited)	100	10	— " —
Gunning & Campbell's (Limited)	50	15	— " —
AMERICAN SHARES & BONDS. *The following quotations are all 4s. per dollar.*	Redeemable.	Rate of Interest.	
Illinois Central	1875	7 per c.	— " —
Do. 100 dols. Shares, all paid	—	—	[illegible] " —
Michigan Central Convertible	1869	8 per c.	— " —
Do. Central Sinking Fund Convertible, first mortgage	1882	8 per c.	— " —
Do. 100 dols. Shares	—	—	— " —
New York Central Sinking Fund	1883	6 per c.	— " —
Do. Convertible	1876	7 per c.	— " —
Do. 100 dols. Shares	—	—	— " —
Detroit and Milwaukee 7 per cent.			

JOSIAS CUNNINGHAM & CO.,
Stock, Share, Seed, and General Brokers,
Foreign Agents, and Commission Merchants.
Belfast, Saturday, November 17, 1866.