

CHAPTER VII. 1875-1885.

Mr Jenkin's Illness - Captain Jenkin - The Golden Wedding - Death of Uncle John - Death of Mr. and Mrs. Austin - Illness and Death of the Captain - Death of Mrs. Jenkin - Effect on Fleeming - Telpherage - The End.

AND now I must resume my narrative for that melancholy business that concludes all human histories. In January of the year 1875, while Fleeming's sky was still unclouded, he was reading Smiles. 'I read my engineers' lives steadily,' he writes, 'but find biographies depressing. I suspect one reason to be that misfortunes and trials can be graphically described, but happiness and the causes of happiness either cannot be or are not. A grand new branch of literature opens to my view: a drama in which people begin in a poor way and end, after getting gradually happier, in an ecstasy of enjoyment. The common novel is not the thing at all. It gives struggle followed by relief. I want each act to close on a new and triumphant happiness, which has been steadily growing all the while. This is the real antithesis of tragedy, where things get blacker and blacker and end in hopeless woe. Smiles has not grasped my grand idea, and only shows a bitter struggle followed by a little respite before death. Some feeble critic might say my new idea was not true to nature. I'm sick of this old-fashioned notion

of art. Hold a mirror up, indeed! Let's paint a picture of how things ought to be and hold that up to nature, and perhaps the poor old woman may repent and mend her ways.' The 'grand idea' might be possible in art; not even the ingenuity of nature could so round in the actual life of any man. And yet it might almost seem to fancy that she had read the letter and taken the hint; for to Fleeming the cruelties of fate were strangely blended with tenderness, and when death came, it came harshly to others, to him not unkindly.

In the autumn of that same year 1875, Fleeming's father and mother were walking in the garden of their house at Merchiston, when the latter fell to the ground. It was thought at the time to be a stumble; it was in all likelihood a premonitory stroke of palsy. From that day, there fell upon her an abiding panic fear; that glib, superficial part of us that speaks and reasons could allege no cause, science itself could find no mark of danger, a son's solicitude was laid at rest; but the eyes of the body saw the approach of a blow, and the consciousness of the body trembled at its coming. It came in a moment; the brilliant, spirited old lady leapt from her bed, raving. For about six months, this stage of her disease continued with many painful and many pathetic circumstances; her husband who tended her, her son who was unwearied in his visits, looked for no change in her condition but the change that comes to all. 'Poor mother,' I find Fleeming writing, 'I cannot get the tones of her voice out of my head. . . I may have to bear this pain for a long time; and so I am bearing it

and sparing myself whatever pain seems useless. Mercifully I do sleep, I am so weary that I must sleep.' And again later: 'I could do very well, if my mind did not revert to my poor mother's state whenever I stop attending to matters immediately before me.' And the next day: 'I can never feel a moment's pleasure without having my mother's suffering recalled by the very feeling of happiness. A pretty, young face recalls hers by contrast - a careworn face recalls it by association. I tell you, for I can speak to no one else; but do not suppose that I wilfully let my mind dwell on sorrow.'

In the summer of the next year, the frenzy left her; it left her stone deaf and almost entirely aphasic, but with some remains of her old sense and courage. Stoutly she set to work with dictionaries, to recover her lost tongues; and had already made notable progress, when a third stroke scattered her acquisitions. Thenceforth, for nearly ten years, stroke followed upon stroke, each still further jumbling the threads of her intelligence, but by degrees so gradual and with such partiality of loss and of survival, that her precise state was always and to the end a matter of dispute. She still remembered her friends; she still loved to learn news of them upon the slate; she still read and marked the list of the subscription library; she still took an interest in the choice of a play for the theatricals, and could remember and find parallel passages; but alongside of these surviving powers, were lapses as remarkable, she misbehaved like a child, and a servant

had to sit with her at table. To see her so sitting, speaking with the tones of a deaf mute not always to the purpose, and to remember what she had been, was a moving appeal to all who knew her. Such was the pathos of these two old people in their affliction, that even the reserve of cities was melted and the neighbours vied in sympathy and kindness. Where so many were more than usually helpful, it is hard to draw distinctions; but I am directed and I delight to mention in particular the good Dr. Joseph Bell, Mr. Thomas, and Mr. Archibald Constable with both their wives, the Rev. Mr. Belcombe (of whose good heart and taste I do not hear for the first time - the news had come to me by way of the Infirmary), and their next-door neighbour, unwearied in service, Miss Hannah Mayne. Nor should I omit to mention that John Ruffini continued to write to Mrs. Jenkin till his own death, and the clever lady known to the world as Vernon Lee until the end: a touching, a becoming attention to what was only the wreck and survival of their brilliant friend.

But he to whom this affliction brought the greatest change was the Captain himself. What was bitter in his lot, he bore with unshaken courage; only once, in these ten years of trial, has Mrs. Fleeming Jenkin seen him weep; for the rest of the time his wife - his commanding officer, now become his trying child - was served not with patience alone, but with a lovely happiness of temper. He had belonged all his life to the ancient, formal, speechmaking, compliment-presenting school of courtesy; the dictates of this code

partook in his eyes of the nature of a duty; and he must now be courteous for two. Partly from a happy illusion, partly in a tender fraud, he kept his wife before the world as a still active partner. When he paid a call, he would have her write 'with love' upon a card; or if that (at the moment) was too much, he would go armed with a bouquet and present it in her name. He even wrote letters for her to copy and sign: an innocent substitution, which may have caused surprise to Ruffini or to Vernon Lee, if they ever received, in the hand of Mrs. Jenkin the very obvious reflections of her husband. He had always adored this wife whom he now tended and sought to represent in correspondence: it was now, if not before, her turn to repay the compliment; mind enough was left her to perceive his unwearied kindness; and as her moral qualities seemed to survive quite unimpaired, a childish love and gratitude were his reward. She would interrupt a conversation to cross the room and kiss him. If she grew excited (as she did too often) it was his habit to come behind her chair and pat her shoulder; and then she would turn round, and clasp his hand in hers, and look from him to her visitor with a face of pride and love; and it was at such moments only that the light of humanity revived in her eyes. It was hard for any stranger, it was impossible for any that loved them, to behold these mute scenes, to recall the past, and not to weep. But to the Captain, I think it was all happiness. After these so long years, he had found his wife again; perhaps kinder than ever before; perhaps now on a more equal footing; certainly, to his eyes, still beautiful. And the call made on his

intelligence had not been made in vain. The merchants of Aux Cayes, who had seen him tried in some 'counter-revolution' in 1845, wrote to the consul of his 'able and decided measures,' 'his cool, steady judgment and discernment' with admiration; and of himself, as 'a credit and an ornament to H. M. Naval Service.' It is plain he must have sunk in all his powers, during the years when he was only a figure, and often a dumb figure, in his wife's drawing-room; but with this new term of service, he brightened visibly. He showed tact and even invention in managing his wife, guiding or restraining her by the touch, holding family worship so arranged that she could follow and take part in it. He took (to the world's surprise) to reading - voyages, biographies, Blair's SERMONS, even (for her letter's sake) a work of Vernon Lee's, which proved, however, more than he was quite prepared for. He shone more, in his remarkable way, in society; and twice he had a little holiday to Glenmorven, where, as may be fancied, he was the delight of the Highlanders. One of his last pleasures was to arrange his dining-room. Many and many a room (in their wandering and thriftless existence) had he seen his wife furnish with exquisite taste, and perhaps with 'considerable luxury': now it was his turn to be the decorator. On the wall he had an engraving of Lord Rodney's action, showing the PROTHEE, his father's ship, if the reader recollects; on either side of this on brackets, his father's sword, and his father's telescope, a gift from Admiral Buckner, who had used it himself during the engagement; higher yet, the head of his grandson's first stag, portraits of his son and his son's wife, and

a couple of old Windsor jugs from Mrs. Buckner's. But his simple trophy was not yet complete; a device had to be worked and framed and hung below the engraving; and for this he applied to his daughter-in-law: 'I want you to work me something, Annie. An anchor at each side - an anchor - stands for an old sailor, you know - stands for hope, you know - an anchor at each side, and in the middle THANKFUL.' It is not easy, on any system of punctuation, to represent the Captain's speech. Yet I hope there may shine out of these facts, even as there shone through his own troubled utterance, some of the charm of that delightful spirit.

In 1881, the time of the golden wedding came round for that sad and pretty household. It fell on a Good Friday, and its celebration can scarcely be recalled without both smiles and tears. The drawing-room was filled with presents and beautiful bouquets; these, to Fleeming and his family, the golden bride and bridegroom displayed with unspeakable pride, she so painfully excited that the guests feared every moment to see her stricken afresh, he guiding and moderating her with his customary tact and understanding, and doing the honours of the day with more than his usual delight. Thence they were brought to the dining-room, where the Captain's idea of a feast awaited them: tea and champagne, fruit and toast and childish little luxuries, set forth pell-mell and pressed at random on the guests. And here he must make a speech for himself and his wife, praising their destiny, their marriage, their son, their daughter-in-law, their grandchildren, their manifold causes

of gratitude: surely the most innocent speech, the old, sharp contemner of his innocence now watching him with eyes of admiration. Then it was time for the guests to depart; and they went away, bathed, even to the youngest child, in tears of inseparable sorrow and gladness, and leaving the golden bride and bridegroom to their own society and that of the hired nurse.

It was a great thing for Fleeming to make, even thus late, the acquaintance of his father; but the harrowing pathos of such scenes consumed him. In a life of tense intellectual effort, a certain smoothness of emotional tenor were to be desired; or we burn the candle at both ends. Dr. Bell perceived the evil that was being done; he pressed Mrs. Jenkin to restrain her husband from too frequent visits; but here was one of those clear-cut, indubitable duties for which Fleeming lived, and he could not pardon even the suggestion of neglect.

And now, after death had so long visibly but still innocuously hovered above the family, it began at last to strike and its blows fell thick and heavy. The first to go was uncle John Jenkin, taken at last from his Mexican dwelling and the lost tribes of Israel; and nothing in this remarkable old gentleman's life, became him like the leaving of it. His sterling, jovial acquiescence in man's destiny was a delight to Fleeming. 'My visit to Stowting has been a very strange but not at all a painful one,' he wrote. 'In case you ever wish to make a person die as he ought to die in a novel,'

he said to me, 'I must tell you all about my old uncle.' He was to see a nearer instance before long; for this family of Jenkin, if they were not very aptly fitted to live, had the art of manly dying. Uncle John was but an outsider after all; he had dropped out of hail of his nephew's way of life and station in society, and was more like some shrewd, old, humble friend who should have kept a lodge; yet he led the procession of becoming deaths, and began in the mind of Fleeming that train of tender and grateful thought, which was like a preparation for his own. Already I find him writing in the plural of 'these impending deaths'; already I find him in quest of consolation. 'There is little pain in store for these wayfarers,' he wrote, 'and we have hope - more than hope, trust.'

On May 19, 1884, Mr. Austin was taken. He was seventy-eight years of age, suffered sharply with all his old firmness, and died happy in the knowledge that he had left his wife well cared for. This had always been a bosom concern; for the Barrons were long-lived and he believed that she would long survive him. But their union had been so full and quiet that Mrs. Austin languished under the separation. In their last years, they would sit all evening in their own drawing-room hand in hand: two old people who, for all their fundamental differences, had yet grown together and become all the world in each other's eyes and hearts; and it was felt to be a kind release, when eight months after, on January 14, 1885, Eliza Barron followed Alfred Austin. 'I wish I could save you from

all pain,' wrote Fleeming six days later to his sorrowing wife, 'I would if I could - but my way is not God's way; and of this be assured, - God's way is best.'

In the end of the same month, Captain Jenkin caught cold and was confined to bed. He was so unchanged in spirit that at first there seemed no ground of fear; but his great age began to tell, and presently it was plain he had a summons. The charm of his sailor's cheerfulness and ancient courtesy, as he lay dying, is not to be described. There he lay, singing his old sea songs; watching the poultry from the window with a child's delight; scribbling on the slate little messages to his wife, who lay bed-ridden in another room; glad to have Psalms read aloud to him, if they were of a pious strain - checking, with an 'I don't think we need read that, my dear,' any that were gloomy or bloody. Fleeming's wife coming to the house and asking one of the nurses for news of Mrs. Jenkin, 'Madam, I do not know,' said the nurse; 'for I am really so carried away by the Captain that I can think of nothing else.' One of the last messages scribbled to his wife and sent her with a glass of the champagne that had been ordered for himself, ran, in his most finished vein of childish madrigal: 'The Captain bows to you, my love, across the table.' When the end was near and it was thought best that Fleeming should no longer go home but sleep at Merchiston, he broke his news to the Captain with some trepidation, knowing that it carried sentence of death. 'Charming, charming - charming arrangement,' was the Captain's only commentary. It was

the proper thing for a dying man, of Captain Jenkin's school of manners, to make some expression of his spiritual state; nor did he neglect the observance. With his usual abruptness, 'Fleeming,' said he, 'I suppose you and I feel about all this as two Christian gentlemen should.' A last pleasure was secured for him. He had been waiting with painful interest for news of Gordon and Khartoum; and by great good fortune, a false report reached him that the city was relieved, and the men of Sussex (his old neighbours) had been the first to enter. He sat up in bed and gave three cheers for the Sussex regiment. The subsequent correction, if it came in time, was prudently withheld from the dying man. An hour before midnight on the fifth of February, he passed away: aged eighty-four.

Word of his death was kept from Mrs. Jenkin; and she survived him no more than nine and forty hours. On the day before her death, she received a letter from her old friend Miss Bell of Manchester, knew the hand, kissed the envelope, and laid it on her heart; so that she too died upon a pleasure. Half an hour after midnight, on the eighth of February, she fell asleep: it is supposed in her seventy-eighth year.

Thus, in the space of less than ten months, the four seniors of this family were taken away; but taken with such features of opportunity in time or pleasant courage in the sufferer, that grief was tempered with a kind of admiration. The effect on Fleeming was profound. His pious optimism increased and became touched with

something mystic and filial. 'The grave is not good, the approaches to it are terrible,' he had written in the beginning of his mother's illness: he thought so no more, when he had laid father and mother side by side at Stowting. He had always loved life; in the brief time that now remained to him, he seemed to be half in love with death. 'Grief is no duty,' he wrote to Miss Bell; 'it was all too beautiful for grief,' he said to me; but the emotion, call it by what name we please, shook him to his depths; his wife thought he would have broken his heart when he must demolish the Captain's trophy in the dining-room, and he seemed thenceforth scarcely the same man.

These last years were indeed years of an excessive demand upon his vitality; he was not only worn out with sorrow, he was worn out by hope. The singular invention to which he gave the name of telpherage, had of late consumed his time, overtaxed his strength and overheated his imagination. The words in which he first mentioned his discovery to me - 'I am simply Alnaschar' - were not only descriptive of his state of mind, they were in a sense prophetic; since whatever fortune may await his idea in the future, it was not his to see it bring forth fruit. Alnaschar he was indeed; beholding about him a world all changed, a world filled with telpherage wires; and seeing not only himself and family but all his friends enriched. It was his pleasure, when the company was floated, to endow those whom he liked with stock; one, at least, never knew that he was a possible rich man until the grave

had closed over his stealthy benefactor. And however Fleeming chafed among material and business difficulties, this rainbow vision never faded; and he, like his father and his mother, may be said to have died upon a pleasure. But the strain told, and he knew that it was telling. 'I am becoming a fossil,' he had written five years before, as a kind of plea for a holiday visit to his beloved Italy. 'Take care! If I am Mr. Fossil, you will be Mrs. Fossil, and Jack will be Jack Fossil, and all the boys will be little fossils, and then we shall be a collection.' There was no fear more chimerical for Fleeming; years brought him no repose; he was as packed with energy, as fiery in hope, as at the first; weariness, to which he began to be no stranger, distressed, it did not quiet him. He feared for himself, not without ground, the fate which had overtaken his mother; others shared the fear. In the changed life now made for his family, the elders dead, the sons going from home upon their education, even their tried domestic (Mrs. Alice Dunns) leaving the house after twenty-two years of service, it was not unnatural that he should return to dreams of Italy. He and his wife were to go (as he told me) on 'a real honeymoon tour.' He had not been alone with his wife 'to speak of,' he added, since the birth of his children. But now he was to enjoy the society of her to whom he wrote, in these last days, that she was his 'Heaven on earth.' Now he was to revisit Italy, and see all the pictures and the buildings and the scenes that he admired so warmly, and lay aside for a time the irritations of his strenuous activity. Nor was this all. A trifling operation was to

restore his former lightness of foot; and it was a renovated youth that was to set forth upon this reënacted honeymoon.

The operation was performed; it was of a trifling character, it seemed to go well, no fear was entertained; and his wife was reading aloud to him as he lay in bed, when she perceived him to wander in his mind. It is doubtful if he ever recovered a sure grasp upon the things of life; and he was still unconscious when he passed away, June the twelfth, 1885, in the fifty-third year of his age. He passed; but something in his gallant vitality had impressed itself upon his friends, and still impresses. Not from one or two only, but from many, I hear the same tale of how the imagination refuses to accept our loss and instinctively looks for his reappearing, and how memory retains his voice and image like things of yesterday. Others, the well-beloved too, die and are progressively forgotten; two years have passed since Fleeming was laid to rest beside his father, his mother, and his Uncle John; and the thought and the look of our friend still haunt us.

APPENDIX.

NOTE ON THE CONTRIBUTIONS OF FLEEMING JENKIN TO ELECTRICAL
AND
ENGINEERING SCIENCE. BY SIR WILLIAM THOMSON, F.R.S., LL D., ETC.,
ETC.

IN the beginning of the year 1859 my former colleague (the first British University Professor of Engineering), Lewis Gordon, at that time deeply engaged in the then new work of cable making and cable laying, came to Glasgow to see apparatus for testing submarine cables and signalling through them, which I had been preparing for practical use on the first Atlantic cable, and which had actually done service upon it, during the six weeks of its successful working between Valencia and Newfoundland. As soon as he had seen something of what I had in hand, he said to me, 'I would like to show this to a young man of remarkable ability, at present engaged in our works at Birkenhead.' Fleeming Jenkin was accordingly telegraphed for, and appeared next morning in Glasgow. He remained for a week, spending the whole day in my class-room and laboratory, and thus pleasantly began our lifelong acquaintance. I was much struck, not only with his brightness and ability, but with his resolution to understand everything spoken of, to see if possible thoroughly through every difficult question, and (no if about

this!) to slur over nothing. I soon found that thoroughness of honesty was as strongly engrained in the scientific as in the moral side of his character.

In the first week of our acquaintance, the electric telegraph and, particularly, submarine cables, and the methods, machines, and instruments for laying, testing, and using them, formed naturally the chief subject of our conversations and discussions; as it was in fact the practical object of Jenkin's visit to me in Glasgow; but not much of the week had passed before I found him remarkably interested in science generally, and full of intelligent eagerness on many particular questions of dynamics and physics. When he returned from Glasgow to Birkenhead a correspondence commenced between us, which was continued without intermission up to the last days of his life. It commenced with a well-sustained fire of letters on each side about the physical qualities of submarine cables, and the practical results attainable in the way of rapid signalling through them. Jenkin used excellently the valuable opportunities for experiment allowed him by Newall, and his partner Lewis Gordon, at their Birkenhead factory. Thus he began definite scientific investigation of the copper resistance of the conductor, and the insulating resistance and specific inductive capacity of its gutta-percha coating, in the factory, in various stages of manufacture; and he was the very first to introduce systematically into practice the grand system of absolute measurement founded in Germany by Gauss and Weber. The immense value of this step, if

only in respect to the electric telegraph, is amply appreciated by all who remember or who have read something of the history of submarine telegraphy; but it can scarcely be known generally how much it is due to Jenkin.

Looking to the article 'Telegraph (Electric)' in the last volume of the old edition of the 'Encyclopaedia Britannica,' which was published about the year 1861, we find on record that Jenkin's measurements in absolute units of the specific resistance of pure gutta-percha, and of the gutta-percha with Chatterton's compound constituting the insulation of the Red Sea cable of 1859, are given as the only results in the way of absolute measurements of the electric resistance of an insulating material which had then been made. These remarks are prefaced in the 'Encyclopaedia' article by the following statement: 'No telegraphic testing ought in future to be accepted in any department of telegraphic business which has not this definite character; although it is only within the last year that convenient instruments for working, in absolute measure, have been introduced at all, and the whole system of absolute measure is still almost unknown to practical electricians.'

A particular result of great importance in respect to testing is referred to as follows in the 'Encyclopaedia' article: 'The importance of having results thus stated in absolute measure is illustrated by the circumstance, that the writer has been able at once to compare them, in the manner stated in a preceding

paragraph, with his own previous deductions from the testings of the Atlantic cable during its manufacture in 1857, and with Weber's measurements of the specific resistance of copper.' It has now become universally adapted - first of all in England; twenty-two years later by Germany, the country of its birth; and by France and Italy, and all the other countries of Europe and America - practically the whole scientific world - at the Electrical Congress in Paris in the years 1882 and 1884.

An important paper of thirty quarto pages published in the 'Transactions of the Royal Society' for June 19, 1862, under the title 'Experimental Researches on the Transmission of Electric Signals through submarine cables, Part I. Laws of Transmission through various lengths of one cable, by Fleeming Jenkin, Esq., communicated by C. Wheatstone, Esq., F.R.S.,' contains an account of a large part of Jenkin's experimental work in the Birkenhead factory during the years 1859 and 1860. This paper is called Part I. Part II. alas never appeared, but something that it would have included we can see from the following ominous statement which I find near the end of Part I.: 'From this value, the electrostatic capacity per unit of length and the specific inductive capacity of the dielectric, could be determined. These points will, however, be more fully treated of in the second part of this paper.' Jenkin had in fact made a determination at Birkenhead of the specific inductive capacity of gutta-percha, or of the gutta-percha and Chatterton's compound constituting the

insulation of the cable, on which he experimented. This was the very first true measurement of the specific inductive capacity of a dielectric which had been made after the discovery by Faraday of the existence of the property, and his primitive measurement of it for the three substances, glass, shellac, and sulphur; and at the time when Jenkin made his measurements the existence of specific inductive capacity was either unknown, or ignored, or denied, by almost all the scientific authorities of the day.

The original determination of the microfarad, brought out under the auspices of the British Association Committee on Electrical Standards, is due to experimental work by Jenkin, described in a paper, 'Experiments on Capacity,' constituting No. IV. of the appendix to the Report presented by the Committee to the Dundee Meeting of 1867. No other determination, so far as I know, of this important element of electric measurement has hitherto been made; and it is no small thing to be proud of in respect to Jenkin's fame as a scientific and practical electrician that the microfarad which we now all use is his.

The British Association unit of electrical resistance, on which was founded the first practical approximation to absolute measurement on the system of Gauss and Weber, was largely due to Jenkin's zeal as one of the originators, and persevering energy as a working member, of the first Electrical Standards Committee. The experimental work of first making practical standards, founded on

the absolute system, which led to the unit now known as the British Association ohm, was chiefly performed by Clerk Maxwell and Jenkin. The realisation of the great practical benefit which has resulted from the experimental and scientific work of the Committee is certainly in a large measure due to Jenkin's zeal and perseverance as secretary, and as editor of the volume of Collected Reports of the work of the Committee, which extended over eight years, from 1861 till 1869. The volume of Reports included Jenkin's Cantor Lectures of January, 1866, 'On Submarine Telegraphy,' through which the practical applications of the scientific principles for which he had worked so devotedly for eight years became part of general knowledge in the engineering profession.

Jenkin's scientific activity continued without abatement to the end. For the last two years of his life he was much occupied with a new mode of electric locomotion, a very remarkable invention of his own, to which he gave the name of 'Telpherage.' He persevered with endless ingenuity in carrying out the numerous and difficult mechanical arrangements essential to the project, up to the very last days of his work in life. He had completed almost every detail of the realisation of the system which was recently opened for practical working at Glynde, in Sussex, four months after his death.

His book on 'Magnetism and Electricity,' published as one of Longman's elementary series in 1873, marked a new departure in the

exposition of electricity, as the first text-book containing a systematic application of the quantitative methods inaugurated by the British Association Committee on Electrical Standards. In 1883 the seventh edition was published, after there had already appeared two foreign editions, one in Italian and the other in German.

His papers on purely engineering subjects, though not numerous, are interesting and valuable. Amongst these may be mentioned the article 'Bridges,' written by him for the ninth edition of the 'Encyclopaedia Britannica,' and afterwards republished as a separate treatise in 1876; and a paper 'On the Practical Application of Reciprocal Figures to the Calculation of Strains in Framework,' read before the Royal Society of Edinburgh, and published in the 'Transactions' of that Society in 1869. But perhaps the most important of all is his paper 'On the Application of Graphic Methods to the Determination of the Efficiency of Machinery,' read before the Royal Society of Edinburgh, and published in the 'Transactions,' vol. xxviii. (1876-78), for which he was awarded the Keith Gold Medal. This paper was a continuation of the subject treated in 'Reulaux's Mechanism,' and, recognising the value of that work, supplied the elements required to constitute from Reulaux's kinematic system a full machine receiving energy and doing work.