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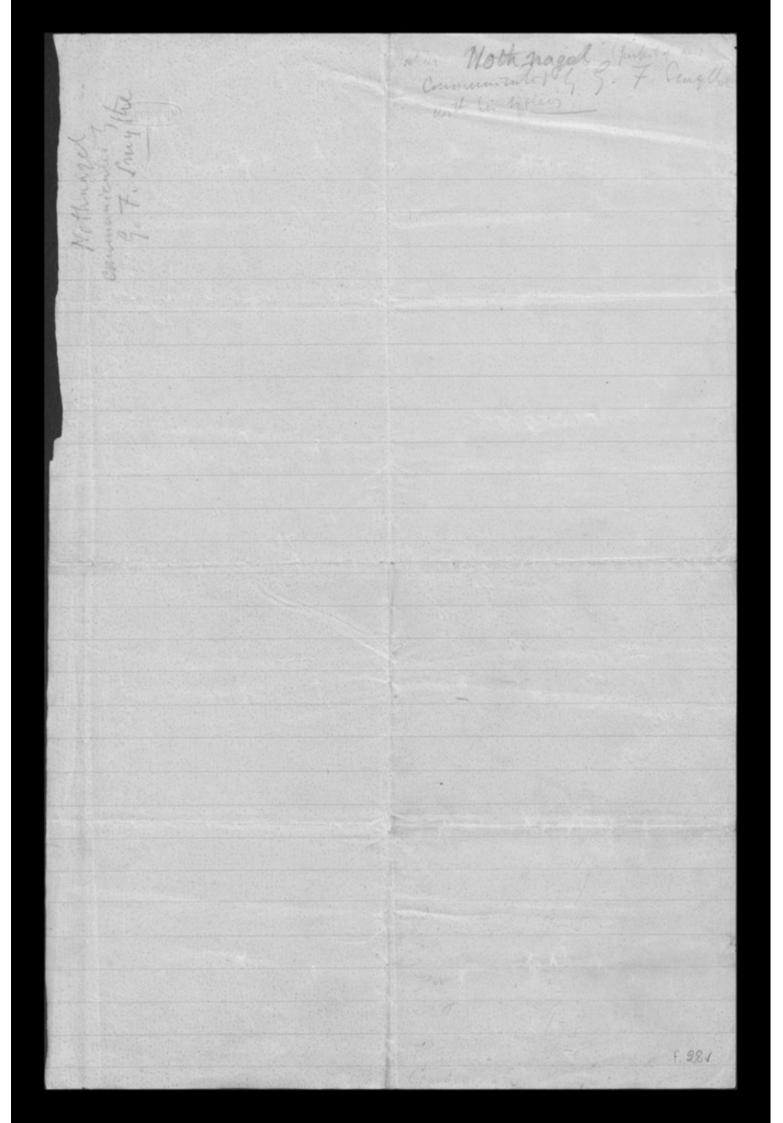
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M. Lecog de Boisbaudrau J. R. S. The House & Tinance Sub-Commettee will meet at 3 oclock. for the purpose of passing Accounts and drawing breques 1 The attendance of Members in town is particularly requested. 26

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Communicated & G. F. Snug the Chas. Nothnagel Nothinggel says That he always risualizes The figures, - sees them printed. 17, 18 and 19 an in the dark and he dislikes Thim. He is disfleased when he gets any of them as an answer to any froblem which he may have to solve, He does not look forward with pleasant to being 17, 18 in 19 years of age. Has always had this form so far as Knows g. 7. S. About the e When I inquired as to the many of the "to" at The bottom of the Thin he fut on the block 220918719514329 20918719514329 1098 1098 brand a continuance, Thus On a level with the eye. Below the eye about here The indistinct



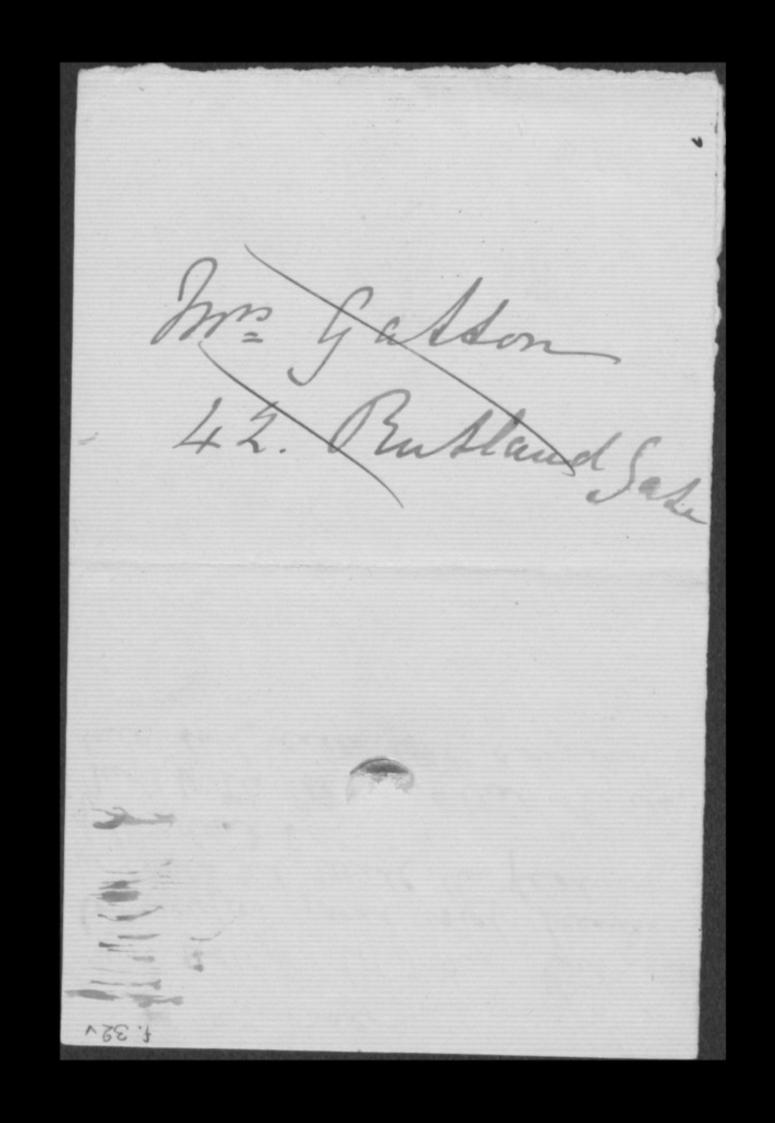
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Bidder



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EXCERPT

MINUTES OF PROCEEDINGS

OF

THE INSTITUTION OF CIVIL ENGINEERS.

Vol. lvii. Session 1878-79. Part iii.

Mr. GEORGE PARKER BIDDER was born on the 14th of June, 1806, at Moreton Hampstead, a village on the borders of Dartmoor, where his father was a stonemason, and where his family had lived for many generations. His career is peculiarly interesting, from his having been brought into public notice at an early age in consequence of the extraordinary arithmetical powers which he developed without any instruction, and also from his having been a leading member of the great company of Civil Engineers to whose skill and indomitable perseverance this country owes its present railway system.

When about six years of age George Bidder was sent to the village school, but he played truant on every possible occasion. At this time he did not know the common numerical symbols, nor the meaning of the word multiplication; but, having been instructed to count up to a hundred, and possessing sundry treasures in the shape of marbles, shot, &c., he was accustomed to amuse himself by arranging these objects in squares and rows of different numbers. Then, by counting them over, he ascertained, and fixed in a singularly retentive memory, the results of the combinations. In this way he taught bimself the value and relation of numbers, and acquired a marvellous facility in dealing with them.

The incident which first brought his talents into notice was a dispute between two neighbours about the weight and price of a pig which one was selling. George Bidder, then about seven years old, who was playing near, suddenly ceased his game, and going up to them, said, "You are both wrong," naming at the same time the correct price, to the great surprise of the disputants.

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f. 11

The village blacksmith's forge-a favourite resort of his, and frequented by all the gossips of the neighbourhood,-became the scene of numerous displays of his power; and many a stiff question was there propounded, and answered by little George, as he sat perched beside the forge fire. Meanwhile he received no instruction in arithmetic beyond the desultory scraps of information derived from persons who came to test his powers, and who often, in doing so, gave him new ideas, and encouraged the further development of his peculiar faculty, until he obtained a mastery of figures that appeared almost incredible. He is described as having been at this time a bright merry little fellow, full of fun and mischief, rather shy when called upon to exhibit his talents before strangers, but slyly enjoying the surprise elicited by his almost instantaneous replies. His reputation soon increased so much that he was taken by his father to all parts of the country to exhibit his extraordinary gift. In April 1815, he was presented to Her Majesty Queen Charlotte by the Bishop of Salisbury, and on that occasion solved various intricate questions with great rapidity and precision. This travelling about the country, for the purpose of exhibiting his son's powers, proved so agreeable and profitable to his father, that the boy's education was entirely neglected. Fortunately, however, amongst those who witnessed his public performances were some gentlemen who thought they discerned qualities worthy of a better career than that of a mere arithmetical prodigy. The Rev. Thomas Jephson, Fellow and Tutor of St. John's College, Cambridge, and the late Sir John Herschel (then Mr. Herschel) visited Moreton in the autumn of 1817, to see the "Calculating Boy ;" and they were so much impressed by his talent and general intelligence that before the vacation was over Mr. Jephson and his Cambridge friends agreed to defray the expenses of his education. His mother was delighted with such a prospect for her boy: she was a good woman, possessed of a great deal of character, and capable of looking beyond the temporary interruption of gain for her son's ultimate advantage. All who knew her, spoke of her as a very pleasing person, and her son George held her memory in most affectionate reverence. The father's consent having been, with much difficulty, obtained, he was placed with the Rev. W. Jephson, master of the Grammar School at Camberwell. There he remained for about a twelvemonth, when his father insisted on removing him, for the purpose of resuming the exhibition of his talents. The boy was accordingly taken from Camberwell, and set forth again, with a sad heart, on further journeys.

Once more, however, kind friends interfered in his behalf, and

this time with better success. Among other places, he was taken to Edinburgh, where he attracted the notice of Sir Henry Jardine, a generous and liberal-minded man, who long held the office of King's Remembrancer for Scotland, and who may be regarded as the founder of George Bidder's fortunes. Sir Henry was so pleased with the boy's disposition, and so satisfied with his capabilities, that, with the assistance of Sir William Rae, Sir George McKenzie, and some other friends, he raised a sufficient subscription, and became responsible for his education. George Bidder was then placed with the Rev. A. Stewart, a private tutor; and afterwards, in 1819, he attended the classes at the University of Edinburgh, where he fully realised the expectations of those who educated him, and in the spring of 1822 obtained the prize given by the magistrates of Edinburgh for the study of the higher mathematics. It was here he first met Robert Stephenson, and that friendship began which afterwards became so remarkable a feature in their lives. He quitted Edinburgh in 1824, when, through the instrumentality of his constant friend and adviser, Sir Henry Jardine, he obtained an appointment on the Ordnance Survey.

Mr. Bidder never forgot what he owed to his University education and the friends who put it within his reach. In 1846, when his professional position was established, being desirous to connect a tribute of gratitude to his Alma Mater with the name of his venerable friend and benefactor, he founded a bursary, or scholarship, of £40 per annum, for the aid of poor students, to be called the "Jardine Bursary." With unaffected simplicity he states in the Deed of Foundation that, feeling deeply indebted to the University, and being sensibly alive to the pecuniary difficulties with which young men of merit have often to contend in obtaining a university education, he earnestly wished to aid in removing such difficulties, in remembrance of his respected friend, Sir Henry Jardine, to whose munificence and kindness he owed the advantages which he had enjoyed. It is pleasant to know that Sir Henry lived to receive this mark of affectionate gratitude.

Mr. Bidder was, at the request of Major Colby, R.E., engaged on the Ordnance Survey, first as a pupil under Mr. R. Dawson, and subsequently as an Assistant Surveyor, at the modest remuneration of three shillings per day; later on he was removed to the Tower, to assist in the computations of the trigonometrical part of the Survey. Under the advice of far-seeing friends he left the Ordnance Department in April 1825, and entered the office of Mr. Henry Robinson Palmer, one of the founders and a Vice President of this Institution, by whom he was employed upon the eastern B 2

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(or Shadwell) entrance of the London Docks, as well as upon several railway and canal surveys. This term of service may be said to have constituted Mr. Bidder's pupilage, though it does not appear that he was articled in the ordinary way.

Sensible of the benefits he had derived from the education so liberally bestowed upon him, he was most anxious that, as far as possible, his two younger brothers should enjoy the same advantages; and his first care was to provide for this out of his small salary, by the most rigid economy and self-denial. In order to supplement his slender resources he undertook, in January 1827, the duties of a clerk at the Royal Exchange Life Assurance Office, in addition to his employment with Mr. Palmer. But the drudgery was unsuited to him; and he was wont to declare, in after life, that he was "the worst clerk that ever entered the office." Tradition also accuses him of having introduced notes of calculations that were passing through his mind into the policies he was writing.

About the year 1829 he entered the office of Messrs. Walker and Burges, his first employment being in connection with the laying of the granite tramway in the Commercial Road, at Limehouse. It may perhaps be deemed fanciful to associate Mr. Bidder's success with any chance augury of good at the outset of his career, but it is none the less true that the endurance of this work seemed typical of his after achievements. One of his colleagues in Messrs. Walker and Burges's office (Mr. J. B. Redman, M. Inst. C.E.), states that in 1871, when the tramway was removed, the original stones were still in place, due in a great measure to the excellent way in which the road was laid. Another notable work upon which Mr. Bidder was engaged as assistant engineer, while with Messrs. Walker and Burges, was (circa 1833-34) the Brunswick wharf at Blackwall, the first instance of the extended employment of cast-iron piles and plates. This work aroused much interest, and was described by his coadjutor, Mr. Borthwick, M. Inst. C.E., in the Transactions of the Inst. C.E., vol. i., p. 195. But the turning point of Mr. Bidder's professional career came in 1834, when he was invited by his old college friend, Mr. Robert Stephenson, to take an appointment on the London and Birmingham railway, the works for which were in full swing, and absorbing most of the engineering talent of the day. The great drawing office at the Eyre Arms tavern, St. John's Wood, which was the headquarters of the railway company, has become classic in the history of modern engineering ; for within its bare walls was located a staff of clever engineers, such as was probably never before, nor has been since, assembled at

one time. There are few survivors of that talented band, but by these it is still well remembered how the routine of the office was enlivened by Mr. Bidder's humour and high spirits.

In 1835-36 Mr. Bidder became connected with Mr. George Stephenson in parliamentary work, and specially in the contest for the various competing lines between London and Brighton, and with the proposed line from Manchester through the Potteries to Rugby. In this capacity ample scope was afforded for his wonderful power of rapid calculation before parliamentary committees. That exciting period embraced the palmy days of engineering; and the universally admitted and pre-eminent skill of Mr. Bidder as a witness very shortly brought him engagements which for many years thoroughly occupied every hour of his time; indeed, scarcely any undertaking of magnitude reached Committee which he was not engaged upon, pro or con. He was the terror of hostile counsel, who found it impossible to discompose him, and who stood in as much dread of his ready and sometimes rough repartee, as of the exact and detailed statements which he could always furnish, running with perfect ease and accuracy through long strings of figures and intricate calculations, which his unfortunate opponents were utterly unable to follow. On one occasion, in a Committee of the House of Lords, an opposing counsel made a fruitless application to their Lordships that Mr. Bidder should not be allowed to remain in the room, because "nature," he said, "had endowed him with particular qualities that did not place his opponents on a fair footing." A remarkable instance of Mr. Bidder's wonderful readiness, and power of mental numeration, occurred in connection with the passing of the Act for the North Staffordshire railway. There were several competing lines, and the object of Mr. Bidder's party was to get rid of as many of them as possible on Standing Orders. They had challenged the accuracy of the levels of one of the rival lines; but upon examination before the Committee on Standing Orders, their antagonists' witnesses were as positive as those for the North Staffordshire, and apparently were likely to command greater credence. Fortunately Mr. Bidder was present, and, when the surveyors of the opposing line were called to prove the levels at various points, he asked to see their field books, which he looked at, apparently, in the most cursory manner, and quietly put down without making a note or a single observation, as though he had not seen anything worthy of notice. When the surveyors had completed their proofs, Mr. Bidder, who had carried on in his own mind a calculation of the heights noted in all the books, not merely of the salient points upon

6

which the witnesses had been examined, but also of the intermediate rises and falls noted in the several books, suddenly exclaimed that he would demonstrate to the Committee that the section was wrong. He then went rapidly through a calculation which took all by surprise, and clearly proved that, if the levels were as represented at one point, they could not possibly be as they were represented at another and distant point. The result was that the errors in the levels were reported, and the Bill was not allowed to proceed.

The prolonged and intimate connection between Mr. Bidder and Messrs. George and Robert Stephenson is too well known to need comment, and cannot be better referred to than by quoting Robert Stephenson's own words in a letter written to Mr. Bidder in 1852, wherein he speaks of "the long and satisfactory private, as well as professional, friendship between two who were at Edinburgh together, and who were afterwards thrown together in a course of engineering which can scarcely be said to have had a parallel."

The names of Robert Stephenson, Isambard Brunel, and Joseph Locke have been linked together as forming an engineering triad, and, from the circumstance of their several deaths occurring within a short space, the connection will perhaps continue; but a more justifiable association would probably be that of Stephenson, Brunel, and Bidder, whose battles in the committee rooms will long be memorable.¹ It has been generally admitted that Mr. Bidder's great talent as a witness was that of analysis; he saw at a glance the weak spot in his opponent's armour, and his judgment was almost infallible.

¹ In Mr. Bidder's presidential address to the Institution of Civil Engineers, Jan. 10, 1860, he alluded in the following terms to the loss of his two friends : "With regard to Mr. Brunel . . . it has frequently been my lot to be placed in professional conflict with that gentleman, and I need hardly say that, in common with every other member of the profession, I found him a very dangerous and most able adversary. . . But he was one of those men in whose minds private friendship was never interrupted by professional strife ; and there never was a time when, if I had needed it, I should have hesitated to resort to him for advice, assistance, or sympathy . . . In alluding to Mr. Robert Stephenson, I cannot but feel that I am scarcely in a position to take an impartial review of his career and of his character. For upwards of a quarter of a century I have enjoyed his most intimate, and, I may add, his most affectionate, friendship. Even this term is, perhaps, hardly strong enough, for throughout the whole of this period, his conduct towards me was that of an elder and affectionate brother. He has encouraged me in all he thought right, and has not failed to criticise all he deemed wrong ; and had the necessity arisen, he would have applied his whole fortune, to his last sixpence, for my benefit."

f. 3v

In 1837 Mr. Bidder was associated with Mr. George Stephenson in the construction of the Blackwall railway, and in applying the rope system of traction by which it was for many years worked. The method of throwing off and disconnecting the carriages, and of working the passenger traffic, was due to Mr. Bidder. In the same year, on the joint recommendation of Mr. Bidder and Mr. Robert Stephenson, the then newly-devised electric telegraph was tried on a length of 16 miles of the London and Birmingham railway, and almost simultaneously on the Blackwall railway. In 1840, when the Yarmouth and Norwich railway bill was in Parliament, Mr. Bidder recommended that the (single) line should be worked by telegraph on a plan of Mr. (afterwards Sir William) Fothergill Cooke. This led to an intimate friendship between the two. Mr. Bidder, guided doubtless by the experience gained upon the railways in question, was one of the first to perceive the immense value of the electric telegraph for commercial and general purposes, and the great future that lay before it in this respect. So impressed was he with this, that he persuaded Mr. Lewis Ricardo, Mr. Stephenson, Mr. Cooke, and others, to join him in forming a Company-the afterwards wellknown Electric Telegraph Company-to provide telegraphic communication for the public. Later on, Sir Charles Wheatstone's scientific abilities were devoted to fostering the bantling, which speedily became a giant. Such was the small beginning of the present extended system of telegraphic communication, of which it is hardly too much to say that Mr. Bidder, although not himself an electrician, was the founder.

When the Belgian railway system was being planned, King Leopold consulted Mr. George Stephenson and Mr. Bidder in respect to it, and the recommendations of the latter were largely followed in laying out the lines, which have a well-grounded reputation for economy and efficiency.

Mr. Bidder was also consulted by Lord Palmerston with reference to slate quarries in the Festiniog district, not at that time in profitable working, and in which his lordship was largely interested. Mr. Bidder advised the removal of the "tops," and a general opening of the quarries, and found a contractor ready to undertake the execution of the works. The result was the development of the quarry into one of a very remunerative character, which laid the foundation of the success of the well-known Welsh Slate Company.

Conspicuous among Mr. Bidder's characteristics were the completeness and symmetry with which he planned a work, and the

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f. 41

prescience with which he endeavoured to provide for future operations. As an instance of this, the laying out of the lines now forming the Great Eastern railway may be noticed. A glance at the map shows a well-planned system of communication, evidently designed as a whole, and singularly free from duplicate lines; and it is to be noted, that, in spite of financial troubles, and of mismanagement which gave it an evil repute, that company has been able to secure and to maintain an uninvaded territory. In looking for a suitable coast terminus for the lines of railway in the Eastern Counties, Mr. Bidder selected Lowestoft, where harbour works were completed about the year 1847, which afforded evidence of what could be effected by skill and capital combined. Among minor works of interest in that district, the swing bridge carrying the Norfolk railway over the river Wensum at Norwich, designed by Mr. Bidder, deserves particular mention as the first of its kind. It was made of cast iron, some of the castings being of great size and weight, and the bridge was considered a rather bold experiment at the time. A description of this structure will be found in vol. v., p. 434, of the 'Minutes of Proceedings.'

Mr. Bidder, in conjunction with Mr. Robert Stephenson, constructed the first railway in Norway, that between Christiania and Eidsvold, about 40 miles in length. It was an inexpensive line, of the type now known as light standard-gauge railways, and was the pioneer of many other lines on the same principle. He was also the engineer-in-chief of the Royal Danish railway, which was opened in 1855, and was instrumental in introducing gas lighting into Denmark, through the medium of an English company, in which he held a considerable stake.

But Mr. Bidder's magnum opus was undoubtedly the construction of the Victoria (London) Docks. Not only the merit of the work, but the idea of providing dock accommodation on a large scale for the trade of London in the Essex marshes was his own. To many the promotion of the scheme appeared to be an act of folly, destined to result in failure; but the result has proved that it was a remarkable instance of his far-seeing wisdom and sound judgment. By the judicious selection of the site, and the adoption of several economical modes of carrying on the works, a dock of the exceptionally large area of nearly 100 acres of deep water, with extensive quay space and warehouse accommodation, with larger lock and lock gates than any then in existence in London, and furnished with hydraulic machinery, cranes, &c., was provided for less than £870,000. To those who are acquainted with the cost of the earlier docks—of comparatively limited extent—

on the Thames, this will appear a notable achievement, especially when the increase in the value of land at the time (1853) is considered. Cast-iron piles and concrete were freely used in the construction of the walls, and resulted, not only in economy of material, but in rendering the employment of a costly cofferdam The 80-feet lock gates were of iron, the outer unnecessary. curve forming the arc of a circle-another bold and successful innovation. These works formed the subject of a Paper, presented to the Institution in 1859 by Mr. W. J. Kingsbury, M. Inst. C.E.,¹ and constituted a new departure in the design of similar structures. Owing to Mr. Bidder's foresight a large additional tract of land was included in the original purchase, with a view to ultimate dock extension; and after the lapse of more than twenty years he had the satisfaction of knowing that his advice was fully justified, by the actual carrying out of his original conception, and upon land the market value of which had probably quadrupled in the interval.

The question of the metropolitan drainage and the purification of the river Thames had indirectly, through his intimacy with Mr. Robert Stephenson, occupied his attention at an early stage. Finally, in April 1858, in conjunction with Mr. Hawksley and Sir Joseph (then Mr.) Bazalgette, a report was presented to the Metropolitan Board of Works upon the Main Drainage of the Metropolis, which had the effect of settling the course of legislation on the subject, and practically determined the scheme as since carried out. A year later, the Metropolitan Board submitted to Messrs. Stephenson, Field, Penn, Hawksley, Bidder, and Bazalgette the numerous competing designs for pumping engines and pumps to be employed by the Board; and those subsequently adopted were based upon the recommendations contained in a report made by the engineers named. Mr. Bidder was also constantly consulted by the Metropolitan Board, sometimes in association with other engineers, but frequently alone.

Mr. Bidder was largely interested in the Indian railway system, chiefly in connection with the Scinde Railway Company, of which he was appointed consulting engineer in 1862, and of its allies the Indus Steam Flotilla, and the Punjaub Railway Company, which may be considered as one undertaking. This great enterprise was started in 1855, and owed its inception to the enthusiastic advocacy of Mr. W. P. Andrew, the well-known chairman of the now united company, who desired to make Kurrachee the great emporium of

¹ Vide Minutes of Proceedings Inst. C.E., vol. xviii., p. 465.

the trade of Northern and Western India. It was originally intended as a line of communication-partly rail and partly steam navigation-from Kurrachee to Lahore and Umritsur; but the scheme was subsequently developed so as to take in the Delhi railway, the whole forming what Mr. Andrew designated a "steam arch." The break in the chain by the navigation of the Indus for 570 miles was always considered by Mr. Bidder as but a temporary expedient, and he boldly supported the construction of a railway, to avoid the difficulties and delays inherent in any system of transshipment, at a time when the authorities shrank from the task. He probably knew that his counsels would prevail at last, but was possibly not prepared for the particular shape the fulfilment of the enterprise threatened to take. In 1869 it was announced that the Government of India had resolved upon taking the completion of the railway system into its own hands, and that future extensions would be made upon the mètre gauge. This at once secured Mr. Bidder's determined and almost vehement opposition, as it involved the interposition of a break of gauge in the midst of an important line, as well as the construction of the Indus Valley railway on a gauge narrower than that of the extremities of the lines it was meant to complete. Thus would have been established, as the result of considerable outlay, a double break of gauge, which would scarcely have been less inconvenient than the transshipment from railway truck to steamer. Then ensued another battle of the gauges, and there was a time when the issue of the contest was doubtful, for the advocates of the mètre gauge had adopted the cry of economy. But the consensus of engineering opinion against the proposal, headed by Mr. Bidder, whose report was first in point of time, was too strong to be overborne; and again he had the gratification of bearing a leading part in a great victory. At present, the Indus Valley (State) railway, on the 5 feet 6 inch gauge, is rapidly approaching completion, thus uniting Delhi to Kurrachee in one line of unbroken railway communication nearly 1,200 miles in length.

In addition to the works mentioned, Mr. Bidder was engaged on numerous railway and other undertakings, the recapitulation of which would be tedious. But actual construction only formed part of Mr. Bidder's practice; and his name will probably be as well or better known to the future student of engineering, by the prominent part he took in the great controversies that agitated the engineering world at the time when the principles which have since governed railway construction and working in this country were being finally settled. Among the many hard blows dealt in the

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"battle of the gauges" Mr. Bidder's sledge-hammer was responsible for not the lightest; and his evidence before the Royal Commissioners was exceedingly effective, and difficult to combat. He had a considerable share in the atmospheric railway controversy. Here also he was associated with Robert Stephenson against Brunel, Cubitt, and Samuda, and again had the good fortune to be on the winning side, in a contest scarcely less determined than the battle of the gauges.

That no appreciable diminution in Mr. Bidder's power of retaining statistics in his memory, and of rapidly dealing with figures both small and great, was perceptible in his later years, may be illustrated by the remarkable evidence he gave, in 1864, as a director of the Great Eastern Railway Company, on the Great Northern (Coal Line) Junction Bill. He then dealt with a multitude of distances, mileage rates, and other figures connected with various railways, besides the one in question. Again, several years later, when, having been requested by the Provost and Town Council of Inverness to report on the Ness floods, after he had visited Scotland during the summer for the purpose, he came to London from Devonshire at the end of 1872, and dictated a large portion of his Report, dealing with the results of calculations involving very large figures, which he had registered in his mind, but without any record on paper, and which he rapidly checked mentally as he proceeded.

From civil engineering to the military branch of the art, as applied to national defence, is a scarcely perceptible gradation in fact, though the Institution of Civil Engineers was dedicated to the proposition that the two are separate and distinct. It was this circumstance that probably induced Mr. Bidder to preface a speech on the national defences by some remarks of an apologetic character, on the occasion of a memorable debate, which occupied five evenings at the Institution.¹ Since then (1861) the connection between the two arts has tended to become closer and closer, and the latter years of Mr. Bidder's life were largely devoted to the consideration of the best means of insuring this country against invasion. In this he was consulted by the Government, who also sought his advice on the subject of ships of war; and as a member of the Royal Commissions on the Loss of the 'Captain,' and on the Construction of Ships, he rendered good service, as well as on the War Office Committee on Gun Cotton and other Explosives. When "The Engineer and Railway Volunteer Staff Corps" was

¹ Vide Minutes of Proceedings Inst. C.E., vol. xx., p. 391.

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created, in 1865, he became the Lieut.-Colonel Commandant, and he took an active part in solving the problems submitted to that body by the War Office. Mr. Bidder retained to the last his early predilection for a seafaring life, and was seldom happier than when cruising in his schooner yacht, the 'Mayfly.' This love of the sea caused him to enter warmly into all nautical questions—notably into the ingenious experiments of his friend the late Mr. W. Froude.

In addition to his connection with various railway companies, Mr. Bidder was chairman or director of several industrial and commercial associations, chief among which were the Netherlands Land Company and the Rock Assurance Company, of which latter corporation he was a member of the board for more than thirty years, his attendance at the weekly meetings being most regular until within a short time of his death.

This brief summary of Mr. Bidder's professional career would be incomplete without special mention of his intimate connection with the Institution of Civil Engineers. In the Report of the Council to the Annual Meeting on the 18th of December, 1878, it is thus referred to:

"Among those who have passed away are several whose reputations were not bounded by the profession, nor even by this country, and whose loss the Council, in common with the other members, most deeply deplore. The name of George Parker Bidder was borne on the register of the Institution for more than half a century, and for nearly half that period he was an active Member of Council, filling the Presidential Chair in the years 1860 and 1861. Few of the older members need be reminded of the occasion when, in the early part of his friend Robert Stephenson's presidentship, Mr. Bidder delivered a lecture on 'Mental Calculation'-his first and only attempt to expound and explain the great gift with which he was endowed, -or of the interest elicited by what was virtually the story of his life. Mr. Bidder was for many years a most regular attendant at the meetings, and invariably took part in all important debates, his keen intellect and powerful oratory tending greatly to advance the discussions."

He joined the Institution in 1825, was elected a member of Council in 1847, a Vice-President in 1854, and served as President during 1860 and 1861. In the latter capacity he made a striking figure at the meetings, his massive head, with its plentiful covering of white hair, conveying the impression of an intellectual Jupiter, which was further borne out by the power and dignity with which he presided over the debates. His contributions to the Proceedings embrace the whole range of engineering, and

require no less than sixteen columns of the general indexes for citation. Nothing was too great or too small to occupy his attention in connection with the profession-from the issues involved in the adoption of a proper system of national defence, to the best mode of preserving a railway sleeper; from harbours of refuge to drain pipes, the sentiment of a philosopher ever impelled him to take interest in, and to further to the best of his ability, the scientific adaptation of means to ends. As is to be expected from the nature of his practice, he spoke most frequently upon railway questions, and on one occasion called himself "only a railway engineer." Next to railway matters, hydraulic engineering seems to have had the greatest attraction for him; perhaps from the facility with which his mathematical powers enabled him to investigate the abstruse problems presented in the consideration of the laws governing the movement of fluids. Drainage, both agricultural and municipal, the electric telegraph, submarine telegraphy, the caloric engine, foundations, the combustion of fuel, the relative value of free and convict labour, dock gates, naval construction, piers, the cost and efficiency of various kinds of motive power, rivers and estuaries, the calculation of roofs, steam navigation, the preservation of timber, the removal of wrecks, are some of the subjects outside his own chosen domain in which he drew on his great stores of knowledge for the benefit of his fellow members. The last occasion on which he spoke at a meeting of the Institution was on the 11th of February, 1873, when he delivered a long, closely reasoned, and telling speech, against the proposal to introduce break of gauge into India, as previously referred to.1 This address may be regarded as a farewell worthy of his last appearance among his associates of nearly half a century.

The processes by which Mr. Bidder performed his calculations have been described by himself, in the Lecture on Mental Arithmetic which he delivered at the Institution of Civil Engineers in 1856. He always expressed the belief that his power of mental calculation was due, not so much to any special faculty, as to the system which, by accident, he had adopted in teaching himself, that, namely, of dealing with the actual numbers represented by concrete things, instead of learning their relations through the medium of arithmetical symbols; and he maintained that most children, if similarly taught, could achieve similar results. To a limited extent this is perhaps true. It cannot be doubted that the system referred to will, unquestionably, give a better grasp of arith-

¹ Vide Minutes of Proceedings Inst. C.E., vol. xxxv., p. 247.

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metical principles and the relations of numbers than the mere teaching by figures. But, after every allowance has been made for the superiority of the system, it must be acknowledged that the mastery of figures possessed by him, and the extraordinary rapidity and accuracy with which his answers were given, required mental powers of a very rare order, and especially a most retentive memory, and a strong power of realising mentally the numbers he dealt with. Even so far as his power was to be attributed to his system, it is not the least remarkable circumstance, and in itself strongly indicates a special faculty, that a child of the age of seven years should, without any teaching, have invented and adopted a system so excellent, and have discovered for himself the rules and principles on which the solution of various problems depended, such as the extraction of square and cube roots and the calculation of compound interest.

It is hardly necessary to remind members of the profession of one example of his power of adapting to practical purposes his gift for figures, namely, the well-known "Earthwork Tables" published by him early in life, and which have been translated into several foreign languages—tables that have saved many hours of weary labour in engineers' offices.

In concluding the above lecture Mr. Bidder accused himself of hastiness of temper. It is probable that the peculiar circumstances of his youth, which enforced the habit of early independence of thought and of self-reliance, rendered him apt to be impatient of the foibles of others, and the very frankness and single-mindedness of his character made it impossible for him to disguise his opinions, however much it might have been his interest to do so. It is also not improbable that this irritability was in a measure nervous, and was due to the intense mental strain induced by a brain which never had any repose. But the roughness was more apparent than real. Trouble met with ready sympathy and help from him ; and there are many, both in his own profession and out of it, who can bear witness to the disinterested zeal and kindness with which he threw himself into the affairs of others, and who know that in him they have lost a faithful counsellor, a true and steadfast friend. Few could enjoy his intimacy without learning to value his geniality, as well as his largeness and warmth of heart. And yet they who never saw Mr. Bidder in his home knew but half his worth, nor could rightly appreciate the perfect unselfishness and gentleness of a man whose greatest delight lay in the happiness of those he loved. His was a singularly bright and sunny disposition ; and though averse from all ostentation and ceremony, he liked to gather his friends round

him in a free and informal manner; to ramble with them round his farm at Mitcham, inspecting the stock and crops; equally ready to listen to a child's prattle, or to discuss curious problems and scientific discoveries, and sure to enliven the conversation with some of the quaint tales and original illustrations with which his memory overflowed.

All children loved him, and seemed instinctively to recognise a kindred and companion spirit in one to whom, even in old age, their voices could bring back the gladness of youth. His kindly feeling extended to animals, whom he could never bear to see ill-used or neglected, taking no little pride in the confidence and affection of his four-footed and his feathered friends, whose habits and intelligence were an unfailing source of amusement to him.

In 1860 he purchased a house at Dartmouth, and from that time spent part of every year in Devonshire; and when obliged, in the summer of 1877, to give up all professional engagements, he retired thither to spend the remainder of his life in the native air which he felt was his best medicine. In his keen appreciation and enjoyment of the marvels of nature, and the intelligent examination of the problems they present, Mr. Bidder did not neglect the serious consideration of a still greater mystery. To use his own words, "There is a point where human knowledge ceases to be possible; but to assert therefore that nothing exists beyond, is to assert a knowledge of what we cannot know."1 He was not the man to accept blindly the teaching of any school, nor was it possible for him to take a narrow view of religion; but he thought much and gravely on the subject, searching with humble and earnest care the revelations of Scripture and science, recognising in the wonderful operations of Nature the hand of a merciful God, and finding a sure hope for all men in the gospel of their Saviour. For the last twelve months of his life he lived as a neighbour to death, knowing, even better than those around him, that for him there was but little time to come, yet accepting the restrictions imposed by failing health with such cheerful serenity, welcoming the friends whose kindness helped to relieve the monotony of an invalid's life with so much genial pleasure, and so ready to be interested in every topic of the day, that for those who loved him the approaching change was impossible to realise.

One of his latest visitors, on the 18th of September, was the Rev. E. Johnstone, of H.M.S. 'Britannia, a gentleman of

¹ Vide Address to the Devonshire Association for the Advancement of Science, Literature, and Art, at Dartmouth, July 20, 1869.

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high mathematical ability and varied acquirements, whose congenial society was a great solace to his invalid friend. Their conversation turned on the theory of light, and speaking of the peculiar opinions of a well-known professor, Mr. Bidder remarked that the pugnacity with which they were advanced sometimes caused him to doubt the sincerity of the unbelief; for, said he, "I can fancy a man combative for his convictions, but not for his non-convictions." Mr. Bidder also observed, that from considering light some of the best notions are obtained of the infinitely great and the infinitely small; the thought of light propagated at 190,000 miles per second across space, and yet taking years, and in some cases many years, to reach the earth, gave a faint idea of the vastness of the visible creation; while the infinitely small is suggested by the fact that 36,918 pulses or waves of light, which only occupy 1 inch in length, are requisite to give the impression of red, while to convey the colour of violet 64,631 waves are necessary. Mr. Johnstone suggested the query that, taking the velocity of light at 190,000 miles per second, how many of its waves must strike the eye and be registered in one second to give the colour red; and, producing a pencil, he was about to calculate the result, when Mr. Bidder said, "You need not work it; the number of vibrations will be 444,433,651,200,000: four hundred and forty-four billions four hundred and thirty-three thousand six hundred and fifty-one millions two hundred thousand vibrations." He subsequently performed some other calculations with equal rapidity, showing how unabated was the mental power when physical life and strength were flickering within a few hours of extinction. In all save himself this wonderful vitality and energy raised vain hopes, and only when without one pang the spirit parted from its wornout frame, was it apparent how frail the link that united them had become.

He died rather suddenly on the 20th of September, 1878, at Dartmouth, and lies in the churchyard of Stoke Fleming, an adjacent village.

> LONDON : PRINTED BY WILLIAM CLOWES AND SONS, STAMFORD STREET AND CHARING CROSS.

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f. 1 COLL NERSIX GALTON PERS 00 Antoine d'Abbadie, Membre de l'Institut. et du Bureau des Longitudes. 120 . rue du Bac

As you are, I believe, two distanguished brothers, I do not know whether you are the one with whom I had a Thort conversation on the R.G. Society when I way in London the last time, in June 1874. It all events you will excuse the present letter suggested by your paper on visualised numerals in Nature nº 533.

I have studied, or at least begun the study of every Science, except entomology, & Discarded metaphysics because its professory Stand on the prow & false an unention that every one must think exactly as each of them. As you very properly Juggest, meataphysics must be built up à porteriori from facts. I therefore furnish a few from the fellows of the Academie by Sciences. you are aware that we are a closed body of 68 individuals. It would be presumptuous to affirm that we are all the leading men of Science in France, but I may Safely affirm that the majority of is ycomposed of them. I have begun examining what there men of Science See in numerals & the enclosed slip was renned at my request by one of them who is a zoologist. Oh asking why he holds 4 ou vedet, his answer was as follows: you see that such a part of my name (which he wishes 5 withhold) means 4 in the South of France which is the cradle of my Januily. Par wusequent, quatre est ma raison d'être?

I was Surprised to find that three mathematicians who live on, in, & for Differentials on being questioned apart by me gave Severally the Same answer that they have no norma in their mind's eye for any habitual arrangement of figures. Another who is was pieuous for applied mathematics Sees every figure singly at a convenient distance before him like a person's head in a Small window & on calling up the consecutive number, the preceeding one Traps Suddenly out of the mind's sight.

on the other half sheet I copy the mind's vivid image of a french lady who has tried often, but always in vain, to learn the multiplication table & makes her additions by counting clussify on this mental diagram she is a first rate musician & excellent judge of the fine arts both for form & colour. She has a keen appreciation of logic & of literature in prose but cases not for poetry & does not fall when a verse is falls. 21 30 from 60 to 80 her figures are hazy vaiditions there are very

my involuntary Diagram is here, only Jam not quite Jure That 200 is on a level with 120. At all events to see is my 3 30 mind zoes you must turn this page upside Down & slope it 12 : Towards a bottomless abyss where 1000000 lies Imig. 20 100

If you express a wigh I shall pursue my enquiry among the remaining 63 fellows of our academy, but I do not Suppose that you confine yourgelf to Distinguished men. 120 200 Antoine & Abbadie 220 I remain truly youry

Paris, 1880, feb ?8.

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12,13,12, 15, 16,17, 18, 19, 20, 30, 40, 50, 60, 70, 80, 90, 11 33 10 28 37 9876543 27 36 26 35 25 34 23 33 24 22 72 21 31 2

P.S. When a child, towards the year 1818 I learnet the Roman numerals from Mavor's spelling book where they were avranged like my mental riagram of Arabic ones. I ascribe my arrangement to this recollection, but fail to explain why I see the diagram in a page upside down. That Mavor's arrangement is the origin of my picture deems proved by the fact that the numbers after eleven deem to me all broader, narrowing at 20. N. all these diagrams are whomeless.



When is US Frence

hoz A Gov

I have no objection to your quoting my letter & name, but have Dear Vir few new facts for you. The aforementioned zoologist found that his Non has no schema for figures, but his wife Jees them so for abs etc. Pray steps into the A is a botanist; neither he nor his wife nor his Son has any shema; A hates Divination . I an Admiral, chiefly practical, & Calso of the nary but more theo retical, have none Dan eminent physicist, is also blank this is mere Academice les Sciences, lettering the fellows. psychology, Saw he & Thase an innate objection to Such speculations." yes

Dig not a freethinker, but known as a pious man. I now fear that I can only get full answers from the few with whom I am intimate. An eminent traveller Very his figures they :

. 36 etc. inverinitely. He calls these breaks his breathing Stops and y not quite Jure whether they occur . 24 25

I have got full anywer to your half Theet from the lady who could at every 12 or every ten. not learn her multiplication table. The answery covreposed to your figure, 1. good; 2 increases the more She thinks of the objects; 3. Sees colors well & Jees 4 Jives of a room at once, but one of them badly; 5 all in her head; 6. It keeps always the Jame light; do'n't know where is the fatigue ; can 7. can Sometime recall Distinctly features; & could Iran if she had learnt, but would omit then minor Retails, colour being very faith fully given. g. Taking as an example a chateou where the make a Janumer the always sees it Dark & the udjoining water also dark; 9. mictures almost always scenes in a novel: has never taken a mental image for a real one 10. Without colour (although having an innate taste for discriminating colour), but from 60 to 80 figures are gray. 12 A unchanging: 12 B always weaker; 12 C Small always weaker; 12D always better than in reality, chiefly for favourite Dighes . when thinking of taster, feel, always an actual contraction of the throat, as if Iwallowing;12 Fall vivid; 13. Recally music very easily, families new melodies & when a morceau is known by heart she dees mentally every note of the riano. 14 Have neither lost nor gained with increase years. See at once 3 sides of a worm but an mentally at the top of the 4th Side when making that Survey; it puzzly me to

of vigualizing - Ghosts become more rare as we travel douth, but become

Sight is sportide every where I take it for a Sixth Jense, as Does M. in Nature. But is Johnson's time hundreds of Jeotemen were Jeery: 40 years ago there were only two of them in the whole breadth of Scotland; how Fare, Jecow Sight now? I have met veers among the French, the Basque & Ethiopiany. However this side of man's mind would lead us too far, Autoine S'Abbadie 2 So I remain truly yours

teb 9 15.

Dear Vir I have got only two new instance, of figured Mous. Jacques Bertillon Son of the authropologist & undersecretary of the Jouety told me that he was brought numbers, viz: up near a garden where he has involuntarely fixed the forst to numbers going up or rather onwards before him. 7 is on an old tarrel of water Junk in the ground where the gardener filled his watering pot. 40 is a large tree beyow. His mind pictures no locality for numbers above 40. The Jecond instance is of a Jort new to me but perhaps you have picked up a Similar one? in my former letter I mentioned the case of a philosopher whose 4, 14, 24 etc all step out of the rank in his mind's eye? He had a haze in his mind from 60, I believe, up to 80; but lately 80 has sprung out, not like vergeants as 4/4, 24, but like a captain farther out still & five or 6 times as large as the privates 1,2,3,5,6 etc. Were I superstituous, Said he, I would conclude that my death will occur in the 80 of the XIXth century. Begging you to accept this mite to your labors which too many people here call weird, I zemain Nery Sincerely your Antoine S'Abbadie 23 Paris, May 30. P.S. The growth & promotion of So was Judden + has remained

constant ever Since, like a real captain. Should be grow still & get his majority, Colonelcy or C.B., I shall take care to inform you.

Dear Sur A few hours after receiving your letter of the 7"inst. I met in the Street Leag de Boisbandran His cousin of the same name live in Paris, rue facob 5 or 7, and Succeeded in getting his pupils to Draw by memory, after ten nimutes inspection, well enough to allow a cavalry officer to recognize his house? The other colleague of nime in the Institut whose 80 has Juddenly & permanently enlarged itself in his mind's eye is 70 years old. Inaturally asked Lecoq how he Jees numbery. His variety is new to me. The Spaces occupied by the figures decrease as the numbers increase, like those of a Sliding rule. In fact & Sees the logarithms of spaces with the members written on them. Moreover L. cannot Say a wow without fancying it before him in printed type. He has studied many branches of knowledge, inter alice mathematics & Chinese His logarithmic Space, Date however from his childhood. His mother until quite lately, after reading a whole novel, could tell in whate part of the page was any passage Subsequently read to her. Haw you not been with an invalid I Should have Scolded you for passing through Paris without calling on me. Most probably you would have met with me new Jubjects of investigation : now I am about leaving for Munich, but I hope to be here again for a Short times from the 1st to the 5th of next month. Antoine S'Abbadie 2 I remain truly yours Paris. June 10.

F. 8

A. ACHARD genere 6 me du Prito S'Pince Ingénieur le 30 Mars 1880 GENÈVE Mr Francis Galton F. R. S. hondon Monticur Taile dans le journal pature avec le plus grand interes votre article intitule' Kimalised unmerals qui m'avait it signale par M' Le propipun de landolle Comme vous parainey disiver recueillis de renseignements mile auricus sujer phychologique dont vous vous occupy. je me permets de vous communiques le obernation que j'ai faite sur me meine a'ut igand. Depuis aufri langtemps que je me Imones d'avoir la notion de nombres, la nombres de 0 à 100 m'apparaisprent interit. vement disposis dela mansine hisvante 20 1. 6. 10 20 9° 100 le pattis de 100 la meme figue recommence, mais her one mornide ichelle de façon à pasaitre plus locataine à 200 de même, 1 anno Amite, deme manièle de maries in morin Fostimite jus ser à 1000. a partir de 1000 et jugi à 100000 la nombe, 16 15 14 13 12 11 expressionant by mollins his apparaipent washerent Jaws to & mene stration on jung Daw with figure, by nomber exprisement by muits. Ainsi juni 28000 là mi j. voi 28, 72000 la' ai junis 17. Il faut

amargue que c'ut autre 12 x 16 quels nouly en'appa raifundes plus espaces, et que de 30 à 100 il me paraifon aller s'apagant de moins . De l'a' lo it de 20 à 20 l'apacement me suble constant. Le 16 à 20 il me surlle aller on diminant. De g à 12, il et plus grand que des 0 à 10 of monde que de la 16.

f. 10v

Si vous disiry une cara chistique mentale de alui qui van donne en raccificement , pour dirai sue juis infe hiven et to porté voy le cité scientifique de ma profession Jans avoir de grandes connaiframes ou mathiessationes sen physique mathematique, et saus avoir une grande desterité de talail, j'aime beaucoup à m'accuper de cer sujets là. Cite disposition tured à lacerostre an l'age (ja: 43 ans). La clusie, qui avait brancoup I'athaits pour mos queued j'avais 18 à 20 ans, me laife indifferent . her himes discriptions want pa, d'athant pour moi, ainci j'aimesais beaunip savai labotanique au point deve al'utilité + del'aprément pratiques, mais beaurage m'a taijours fait defaut pour articpour du cette tude. Ma mémoire, qui ut excellente pour les faits que un sont personnels on ausquels j'ai ité mile', at mediocre pointant breste.

I puis mes indigues une antre particularité pigeholo gique qui me concerne, mais qui, j'è crois, s'est par très vare int un penchant invincible à africuitor à des couleurs les Ins des voyelles it any de diphtongues ou it en qui sont a fand dy mylly parfaitment distingues. rouge

blane

now

Pour moi le son de a at

F 11 hson de 0 ut brun fonié " Il " gris de for ou , bleve fonce i grisatre en " jaune Imfre leta sapplique naturallement any sous tito qu'ils existent infrançais. Votro langue, in raison ala nature spiniale de 24 tous m'apparait isce une tourte grise tis ant ligisment sule bleu on her levert. la consonne une parait itre à la voy le , se que le périmite qui limite meterface plane colorce ut à cette inface ; mais s'entla une intuition ginisale qui nerevit dy moi anume forme priese. J'ai peure une the africable parces surly us debails, it je van prie, Marrian, de recevoi l'àfursaire de ma haute considisation Alchand GALTON

A. ACHARD Mr Francis Galton F. R. S 42. Rutland Gate, London. Ingénieur PAPERS GENÈVE

Junion 10 Auril 1820

Monsiur.

In reporte à votre lettre du Ct. Jernes divai que dans ma marrière de voir le nombre, intraité verment, la déconfrance de intes. valle de nombres, de 30 à 100, ne me amble pas assujité à ane les brus marguée. Il me parait apendant, autant que jequés m'as rendre compte, qu'éle at plutit républie et dans dante bruque, et que sa marche n'es pas brus rapide, car l'intervalle go-100 m'apparaît comme égal à au mins la moité de l'intervalle go-100 m'apparaît comme égal à au mins la moité de l'intervalle do burente, pour avoir le soutienent de cette déconfrance, il un faut souper à le fois à tout l'écheth de nombres ; d'aparte a'un de nombre doit d'auto de partaile que le intervale sout have de nombre d'enter d'aparticulier, il un huell que le intervale sout have de nombre d'ent au d'anter d'anne d'ante. Le part accompte jepune d' 60 je vond':

semple jepane à 60 je vona': 30 10 50 10 70 10 90 100 Une autre interition quep signale a moi, is qui a danche même ordre d'ideis que la précidente, ut alle de mois de l'année sai m'apparaipent comme disport belong d'once ellipse inégaline percourse de les au de fiele. (1 100 pri mon au ditait conacters tique de alle figure consiste en ce que to man fin mon au ditait conacters tique de alle figure consiste en ce que to pri fin mon au ditait conacters tique de alle figure consiste en ce que to pri fin mon au ditait conacters tique de alle figure consiste en ce que to pri fin mon au ditait conacters tique de alle figure consiste en ce que to pri fin mon au ditait conacters tique de alle figure consiste en ce que to pri fin mon au ditait conacters tique de alle figure consiste en ce que to pri fin mon au ditait conacters tique de alle figure consiste en ce que to present in grand are va de 11 Mai au 21 Oteble celle tient, j'a suis convarinces, à aque dans mon unfame cidaient le consecute ai mes parente que d'avant hoille pour compeque is de composed ai mes parente que d'avant hoille pour compeque is de composed pour le vite.

P. S. D'april agangeor on Jever cohligans je

plus distinging Arthand

peuce qu'il n' y a par tien 2 our traver le scheme 30 _ 100. quait à le portion 20-30. ser parties me suillent igals, it Salongneur me suible valoir à peupie, 1/2 fin Talongueurs 30 - 40.

Voiei une observation qui complete malitée précédente ten empoint de rou drais qui habituellement juri ly million la oni juri ly ming chiffy d'amité. Cependant il m'amin souvent, quand il s'apri de sources d'argent influence a' 10000 frands, de voir ly <u>centains</u> la ori juri ly mints dans mon scheme ordi . name, par queuple de voir 2500 à le place de 85 , 1900 à l'eplante 39. Il n'herite para l'atteiler, a l'arce de la terminisation traile par centaing sui criste d'une langue, comme dans la vingte autour de mille par centaing sui 2000 (dere parqueuple de vin l'arche de source autour 1100 de 2000 (dere parqueuple de signiture unt - vingte autour de mille pair cent vingt pune le tembre 1820).

le pareremple je m'effone de perme à le fin à 2500 d'à 29000, je est levrie 25000 à l'aplace de 25, alus 2500 wont aplacementes la conité 2 x 3. Mars 2, appendent à le fons à 25 deux montres, je voir 2500 a'le plue de 25, aler je re plus troises de place pour 25000 et a denne nombre échappe à mer visualisation.

has

F. 13r Dougher archibald A COLLEG SHALTON CALTON PAPERS Growens House Tunkidge body. June 5. 1800. Dear hic, I have written to - Prop Hill of the huir Central College allahabe on the subject of Visualing humerals asking him to institute Enquincies on this subject and allied questions, with the view of Eliciting

f. 13V information that hay in your alle hands lead to remain of Bientitie value. I am too much Eugaged with the work of carrying on an Estattis her Ent for brehaving public bos Wootwich. Coopis Hile, Sand hunt Eli 6 kable to do much

Henry Simpson Fager Harvey F. 14r to help you in the hatter. I Enclose you however a Statementhade by me of my hubics opulat he thinks he seen. It is hot very definite, but Le Evidenty has Voue pour of visualising though he lacks the power to Express whathe sees. Intellectually Le is quite apphenomenon He can hardly spele

f. 14v a high word correctly alice as far as hate smalies are Concerned he bices fair la become a Seria Whayer. Two months ago he had and got half hay Through algebra & Rijournely. Now he has finisting both, has before Statics and read up to pulley has began Dynamics

Douglas Archibald f. 15r & read 4 chapter, has begun Diloft Caluty & has hearly forhay may the augh Idhunten treatire, has further begun Comics & finished the St line. He is only fixteen years of age to I think this heavy fairy be considered a remarkably Tabia progress to have hade in thea houter. To

f. 15V five you forme idea of his attocious 00 Shelling 7 Euclose PAP his lack dictation Excreine. This was dictated a yard from him, & he says he hand every and quite distinctly. There is something broug with his palate but abeture This the any way accounts

F. 161 for his peculiar The thething I do hot Eknow. It looks as though he suffered from a specier of literary apphasia as he leances outlaye pations of words & rentineer. Regarding hayself I can al with call up from an indefinite region a limited

F. 16v mula of figures with which to perfor heutal arite Entical operations. I find it requires a good deal of Ebbar to keep them fixed at birth. The longer they are forced to remain the less the. Ebbout to keep them heaver. I can hantliky four figures by tom mandaly but it is an Elfort hun filmer all Tremain dear bi E. Doudas archibad

Harvey Ennealed & Donchen Hach bald Jansy that Iran see any thing that I have learnt in the way of mumber and figures and the greater the mumber of times I have seen it on paper the plance I can see it in my head. (liques) Henry Simpson Fyer Harvey £ 17

Harvey dictation Decra a Nilant and sudden revelsion of feeling both is the house and and of it was the effect of the lot laste preeding of the reigh to the opposition the assend The consistution raylist were filled with pain and sorraw they saw the they had been crualy beneged by Challes the thought that they were un justly but not unreasonably by the nation Chariton distinction says that they prefused that the - ping had selof by which the been quided and were disple ased a and dejected at unfare manner in which he had it freated them Shat he they were in clined to refire the from his service. During the data on the priviliges they remained in melandly st silence to this day melauch the & advocates of Charles take "are Auray of as little as they can about his visite to to the thouse of some Commone and when they Wannat ab are aid mention of the

181 7 4/10 la = 3x-4+ 1x-At Z . VIBO. 0 4912 2 They a bo if a 8 - 1 -1 ary "conicale 14 - 4 Ju- ta - 2 - 1 1 + 2 (3+5) 31 + 2 M = ALQ == maple + Med Fox \$6-5) R - 7 M + 24 + 15 = 6 ale of the the the share and a 93 (3+6) a = 5(2×3) 14 min as the place A.C. an war

Harvey dictates excreme Court & J. arch Supportio and act which on any other sucherson must have been. The Lommon's days oppently delied the ordered king and meder the accused members to attain their I Westemailer and to to paramentry duties the atizens res alved to bring back whany ih frimpy In pions The chamaes of literity before the wind was of the regal halace Nast proper ations were made that by land and water for this great festival. The King had remained in his palace humbled dismayed and hewilderd he filling tays blackling the frouble and agony that usely attend a generaus and magarious nanimous mind upon having commited errors I around a more of the part des the levelues, but 2 weberer the best dependence outer to what is a mark a mark a COLLED A PILE GALTON E whater to an accurate. forman for a series PAPERS and an dra and and and a fire prestant 1 and made to show the seer Proles --- HER. 10-05. All an Carlo red min mater 1240 8 F. 191

Se matin , worin mous avions afterent dia chances pour la rove Roben mousen of fait perde hente mais nous enave encore sois ante fortie entre talant et musta celenair + on des pass on out. avait la vitarse plus deparetres rara le cord de luculeur, bet venir en nous on mo savant to auss of le la parter la et des le presser, des Derpis cot ina cet have ze Wave. Locimer & et le & se carfout effore pas de salont chim A sprome de on inharre domi clua le general se sonquer la se fond le présont se la devonte I de son rathe plus pour pour samint and le & man & granter 2" he faline Hypoque and an Exitender said hack as all days when a the word to the state 1 Aal halore 19 001410 Som where dudies the Aluer 1 the ate markeder and present the eresed members a day theathy defead MB7 :

Soughen anche bald with Caclotmes Chosvenor House COLLEG GALTON Turkidge Weles Acor 1. 14 1880 PAPERS Dear hu Gallon, I have put received a letter from a prices written to a pieces of her which I forward Leswith topther with two interesting Euclonice I dont know any of the proper refined

P. 20V to but can bouch for the autouting of the productions. The dots are quite a hoverty to use & I dave say to yound also. The writer hund have come from a par Ming family Ishould fancy from the hinilarity of the

figures to those hade by combinations of dice faces. The idea Expressed by the willer of the Spidle of Each of sigura bearing The Wright of di own hunter ova d'is léhewise suggestive. I Enclose you a Somewhat chaotie representation of DOLLE ALTON PERS

The way in which hey heatermatical pupil fancies be Jeer humbers. He says the bostion of the figures defiched is hot always The Same but that the Aualler figures always appear more in the centre of the mental field of vision with the laya humbers Abread round them

Those you have by this time Secured Some valuable histances of this peculiar mental blumena & Ishau he hand interested to hear if any retialle deductions Can le Drawn from the data . Viry faith bully your 2. Douplas anchald

F. 24 For far architral 500 100 a black fround 140 150 30 20 150 12 1 4 2 10 59 3 50 15 10 163 50 70 12000 130 æ Communicater 30 pubil Harvey 14 40 60 80 the layer figures always affear outside the line & the smaller ones inside.

then the ser Edith Grace ? - v mil Block 26. allany Street-Regents Park. Gel-15 # 1550. My dear this Bulles & GALTON E Thanks for your letter is and the book which I did not herrowledge before because I have been whating for the White from my brother Frank however he has not answearing and I attribute it to the Jace that I also asked him to send me the notio of a lecture given by M/ 195 which he does not wish me to have , and his I so ked F. 25r

F. 25V nim for M: Jagor Vibualized mumbers I think he must have muddled the two up together So I have written agam The inclosed I have sent you. is Emmie Blacks She drus it her self so I thought it would be better not to lopy 1. The said the 36 onght to tome over 12, and of she wanted a higher figure than 36 the fill it was Somewhere higher up hit. The had no distinct nois of them, his settie the Anthoness Says the had a very distinct idea of monters hit has bort it introg

3029 f. 26 2762 28 22 2 CHRONICLE 18 131415 24 RS' Min Black. allo sly 12/2.94 Emma D. Black

from Talking much about visual. izing theme I asked another gist who is very cleaver and lend her the book , and the Jays the cannot understand it h lit and nover sees her mumbers at all -I have found out one or two Shings from reading your book fue is that I do not mally se The numbers objectively tenow it more and I know quite well that numbers go from left to right in a straight line 10 100 then there are a hundred mils piled up on that hundred in fact that each figure beans the wight of dis own monther our il; 1234. 100

but when it is drawn it ner Seems the same , and the 10's are always a dibision So that in Talking of 12 I know it is 2 odd mumbers added on to 10. and 50 Seems in the middle , and 16 a square composed of 4 little Squares Lach consisting of 4 milio 1.2.3.4. is allowys the lowestleft hand lomer. My amitimas carts were rejected from the Dudley -You do not Jay how your work for the piano looks now it is finished hope it is mich but Thould think A. is time to be from the dorign of the colors The material if nothing ele I think you will believe I am very hing when I tell you I have not had time to work? to you be fore to day and now it is Hours very sincerely Edith. Srake

Cumunicate & Donden archibald f. 28r The following to the way in which I see numbers. I see one like this -100 I see as " two " « Arec " for " or 5 up & 10 along 50 "five " u :•: blix " a · levers " " eight " ::: " nine " 25 en ten " ...: " Eleven " 144 ** " twelve " :::: " ., 1000 Dace to up and 100 elon " Thirteen " × : : " "Fourtern " .. 200 or 100 up Vloalon "Tifter . : : : : : ., · Lix leen " •, · Leventan .. In such mumbers as .. ten (2) I do not always ·· Eightten " ٠. see the dot marked a ., heneteen twenty I hav that corner · Twenty me but in any other ۰. corner as by or ? . " two ••

Communicated Cy Low Curch Bold f. 28v 50 Commo gendles Arabilited

ann builter Publishing Office PEDROPD CTREET NATURE STRAND. LONDON. 24 St. James Square Advertisements and business lette of be addressed to Notting Hill W Editorial Bund ALA ON to the EDITOR. Jan 17/80 Eir 2/6/3.0 I have read your highly interesting paper in this week's number of "fature" (to which Jam a regular contributor) and shall be very glad to furnish you with information of the Kind you are seeking. like most of your correspondents whose cases you describe, I have, as long as I can remember, visualised all numerage your paper that with all the cases you describe (except one) the mental arrange= ment of the numerals is from left to right. In my case this is reversed and the arrangement of I numerals in my unagination Takes the shape given

F. 29 V on the last page. I see the figures distinctly black on a lighter background. another peculiarity of my mund, and which might perhaps be rare, is my ability to recall the sound of with the greatest viviness. Jain speaking here only of musical sound. I may mention that am a musicia (pranish) by profession. At any time I can recall the sound of a full orchestra and can distinguish most plainly every individual instrument (of course not 2 of the same description if they play the same notes, but say the clarinets pon jentes + ?). This ca= pacity of course furnishes me with a pleasant source of entertainment

as often, when travelling in basty lighted trains, or in cabs and onnihuses where reading is impossible, go through a symphony in Thought, say one of Beethoven's, and enjoy the vivid remembrance of it almost as much as the actual performance, which I may not have heard for years . -I need hardly state That I am blessed with a good memory, otherwise This mental performance would be impossible and with pieces I don't quite remember I often come to a stop. - With a full score in my hands, no matter whether I have heard the composition or not, I can at once hear" it in my mind when I read it, and This do quite unconsciously nuled I find A quite impossible to look at a printed note without at once hearing

f. 30v it's sound in my mind car. apologizing for trespassing on your time with a subject, which may after all be quite common as far as I know, I shall be pleased to answer any question you may like to put to me, and your obest Lert C. Anubruster, 20 PAPERS 120 19 18 17 14 13 30 130 110 100 90 80 70 60 50 40 29 28 27 26 te 25 24 te 23 22 101 91 81 71 61 21 (31 121 51 41 31 The curious point in this imagination is That the twentie are always a coherm higher than all the rest,





March the 4th. 98 Palace Gardens Terrace, W. 311

Dear Sir,

12) another

The enclosed paper by Prof. Perry and myself may perhaps interest you in connection with our conversation at the Royal Society last night regarding the associations of Colour and Sound.

Is it not possible that, in many cases at any rate, visualised numerals are the result of the early impression derived from seeing the numerals so tabulated in some book, since many people like myself have. I presume, the faculty of remembering various facts from the exact position on the page and position of the page in the book in which the fact was first read. This explanation would hardly seem to apply to the more fanciful figures in accordance with which some of your correspondents see numbers, but I think it would be most interesting to trace out, if possible, how far the mental picture

To the present day I can remember on what part of the blackboard at University College the late Prof. De Morgan Prote down certain equations. and certainly some portion of my success as a mathematical student arose from my diagrammatically collat-

But I am afraid I am troubling you with these recollections

Believe me to remain very truly yours

W.E. ayrtm.

Francis Galton Esq. F.R.S. &c. &c.

. Fish

telsebrost

f. 31v

Mayron f. 32 The City and Guilds of London Institute. Jechnical School, Cowper Street, Jisseleury E.C. March 8th GALTON C Dean Ja'. Permit me & send my thanks in the ticket you were so very kind as & send me In goon tomarno Tuesday evening and which I shall have much pleasure in availing myself of. With regard to your question:-I have not any list of examples of people in whim sounds called up patterns, moraics, a sompty flashes of arton, but I have seen

at various times well authentica. -ted instances in Nature "and clie. where. a friend of mine Herri Meyer a ferman attached to the savie of the Japanese fiven. - ment has a large Meetin of such examples which lander --stord from him when I last had thepleasure of seeing him) would from the basis of a book he was going to publish some day. I am inclined, however, withink he had no examples of the converse, that is the impression of sound produced by seeing colours, and

F. 33V

have never met any inistances myself of this latter from of as -

-sociation

Believe me 4 remain

Very truly Your,

W.r. aystin.

Francis falter Con F.R.S

France. 7 Decta I san fis alter my dear Galton - I send you your paper of queries - but fear that my answers of little value. The inquiry you have commenced g difficulty & frat interest but full will lead you farther than you seem at first to have contemplated - By this I mean that I think you will be led to recognize a great amount of complexity in many mental operations that are simply set down to the power of visualising - to use your convenient term, One important factor, at all events, in many of the operations included in your enquiries, is what I may call the geometric faculty - the sense of space - relation which may or may not coexist with a power of vivid visual representation. To speak of the only example at hand - I do not think that I have the visualizing porver to any considerable - certainly not to a remarkable degree, but in all the cases where I am able to answer your questions with a very decided affirmative Vobserve this sense of space-relation to be the chief factor It is not at all, or but shapity & indirectly, the hower of retaining & reproducing visual una that inables a man to follow the operations of a Campaign - or the harrative of an explorer

altering as required a picture involving a great variety of space relations, & the power of playing chep without the board is dependent on exactly the same faculty It is worth remarking that there is one Great difference between Visual images × those formed by the nind .- 19. What are Connonly called maginary ones. Where the actual image excited the attention at the time it is commonly very enduring, whereas the imaginary images - formed we shall say during an urseen game of chep, though ivid for the time a for a short period after, utterly disappear & no effort of menery avails to resuscitate Men I think that I mentioned the last true we met one remark that I have often made, a comparison of well remembered scenes with old sketches made during my earlier years of nomitam wandering has often Ushown e that though generally accurate & vivid mental picture has often some one or two bjects misplaced - This happens I think hrough an unconscious effort of

the mind to complete the picture where it is deficient. Some object vaguely recollected or perhaps altogether unaquiary is introduced. On the next occasion when the nind reverts to the picture what you see is not the original impreficion on the retina, but the revised edition of it which was produced by the process about mentioned. I am inclined to think that in this way a picture to which the mind oflero reverts is apt to be always a little incorrect Each renewal of the mental Jucture is in fact a new edition in which some details have been modified - It is exactly analogous to the proces by which win very huthful people gradually alter an often repeated Story - The mind abhors a vacuum & uses. a more or les un conscions effort to fill Wh blanks due to unperfect menery.

There are a multitude of collateral others questions that will occur to you - why do we form emember some objects to easily & others with Such difficulty - In my case for instance. I have mental pictures of tens of thous ands of individual speciments of dried plants while I doubt whether there as two hundred people in the world whom I distinctly recollect - To say that Spay no atten to the latter is not true - mon Dall like man other ladies observes drep with attention often noticing the drep more than the features

yet the recitlects very well faces that she has seen through the eyeglafs being very shortsighted, but absolutely forgets drep after a short interval & cannot recollect the drepes she herself were four or five years ago though these had been gyeets of especial interest & attention at the time Implose every one can supply anular experiences If you have accasion to write Porte Restante Cannes - Var - France will find are for a fortnight Sclose in haste buy succerly yours John Ball GALTON LONG

Pensione Inglese hervi 23 Jan " F. 3r

my dear Galton - many manter for y letter which I have sent to St Robert and the number of Nature which is extremely curious & interesting - The tendency to connect numeraly with a diagram is a phenomenore attogether new to me & I still find it most shange I did not / as far as Seemenber) enter into any detail in my auswer to your question as to mental arithmetic but as all is fish that comes into your net I may as well tell you that the process by which usually work occurred to me when I was quite young - from eight to vine years & is still that which prefer ordinarily though I can very easily represent the figures to sisualizing) & work in the ordinary way The process & speak of consisted in regarding wory number as an laggregate of multiples or interesting of 10 - - or not unpequently as the difference between such. Hus 749-X 7842 would at once present itself to my mind as a thousand times 7842 lep a quarter of the same, lep once the same of course this applies more especially to or just as likely 3 shall and half a 1000 times to half of that & deduct once the 1842

E. 3V application in division - Subtraction always appeared a sort of self coident. process - the addition of the difference between the subtrahend & the next higher multiples of 10 - & corresponding deduction of that multiple. So distinctly figures of the duneusions that I never found any apistance from looking at the figures but it was otherwise with figures of three dimensioner especially curved surfaces, where in spite of its inherent defects I often found the diagram serviceable. Shope you will get some intelligent Schoolmasters to help your collection of facts which provise to be valuable as well as curious Samgoing to Junis to See something of that region including a Triph Constantine & GALTON F very hus yours Mall

J.O. Bevan ::

Russell House School, Walmley,

Birmingham. Min * 27. ** 1849.

f.4r

Dear Lir:

I must Maach you for the pleasure and informal . tin I downed from the hafter you read before our Philosophi -· lat Louily in Thunday with last. There fieled up the haper I tuised in that allacin t provered it with This . I /rar Ju will suther free it that I her a very udinary udindud hul, in nales to relieve pour france my suctarrassund, I may say that you are at taberty to make use of the pack turiged without any revenuation a halsolver. information is any spring that the I may add a bes facts which

f. 4v may tuable que the mare. readily to autofund There. I aus 36 years of age & at 14, was acticles to a last lage . neer - but when the term fixed by my hiticles was expired it was driedro that I sheeld Joh the humany A mepara pr Viders. I was fairly quick up School, but at the trees of my matulation in ap. 1863. J hun little mine than the duluciones in freek and the pin dozen proprietion a. hudid. By dear havever of hard with , I at lingth Mand 2 saluhling, & a schularthip. I pually took my degree a, 34th Weaufler with Mallematural Jupn 11067. My sight has here very week free my a. funy. I I sufficed much free. Inflammation while al college the ansequence was that I Was anufulled thisland my Eyes as much as profactle & if was my mailie in the

Surcense - meen Tunce a 1.5r week, as accasion, scrard to ruline in a chair, I hafo a Ecciero the work I had due never prepaines. I Haves junes the power of tase. alizing Enclid & matternate cal formula full Reeds to an satured which would search he populate by were who had not had my experience of hard scarcely accured que that Euclid BooksV, YIA NII, VIII. 1X x and a part of 1sook ×11 are not read allacultide hat al though I never tisted my pohers a that uspect, I think I un say that I could al that To proprietuce, within the half of huncielin appece. Istan wird alter in Duy mutal with queale. The mino iple of extremen to an extent which undered letters unnecessary. a proting was undured as glack my from me print to another. - al other times, as if the figure

The a robuter I have forced I putuning the newscule of turines bodies of troops to a Araughtrance, I have been lan. Red to fin upon the Salual that pouts of a landscape, te. he lad, my experience poer to then that with a account acco healthy trace, me does best that which me practices mont. In will see that I am lauratally defuceral as a munecian hel may that not be, That from Varian Churce Shace been deproved of all matuching A fursuled from exhibiting the puits of possible acquisition . Pray do not talle the trucke Muchanolidging this litter. Betweener li be Dear In. Authlully price. F. G. a. Bsom.

COLLEGE J.O. Bevan GALTON Russell Bouse School, delmley, Birmingham. 72. 1Secupier Hond. Edybustin. Broughance . ap. 21, "hland, Dear Lir I hadne a withing from the "heard" of the 16th and Munity por have already the it suther in the Luni, n the lacare but I send A neuerthelp. Ju will mittent. much gil herhaps as it stands, althaut any vinfuation but

if what is 2 later the here twee it may purciet aucher, live of unstightin Ju yun ananche, into the power of manalyature. I by gue core and talle Mutulle hackenter the lecipi y their. Jun dealler Sauthfully SS 10.13 Sour Halten Syce

1 F. 8r Ena Bidder QC Stoke Bouse, Stoke Mleming. GALTON Dartmonth 2/7/2/6/4 Sum april 14 the/19 my dear for dificily in answering proquestions tony our satisfaction but I will do to A the hest of my and -1ª Can I reflore me prove or dragram Ganthe at aile? Certainly if I change the subject of they thought. I believe that every puljest that he courses my thoughts appears

Sinterelle, Miteusten, Dhy conscioners accounted with once tot of picture dragam or maginary form - I they then i'enjoyed in solving a germetrical public inthing the relations of lines planes & Idelitantity huld up is my mind a fyme plane or solid as the case requires het there is a limit to my poner in this respect e.g. if the public makes the relative portions and Inhesterins of many surface it kannes a famful effort to pack them all simultaneousy.

F. 81

2. Con Jeans the pyine or drapams benlarge & Dimineich ? I here Rund the \$ 80 po and feel Every douttful has for this is within my poner - I should lather kinclined stay that h mental unoger the idea of alsolute mapring (as distinguished from relative magnitude Alterparts is not present at all. The and will smittles tops they their might he hiperter & le the cand 3.L. Com I cann a row of figures & whate or make them adden aferspectue appearance? Wohing a casier than touragine and towatch mentally the Watin

or the motion of any them Subich Water or motion is hatural l.g - a wheel, a crank, a roher - h many much cases Suchie to think the process consects in Calling up a sort of typual unage formed out finnhimeralle hyme "periences - In the case of a row Hen as in a horizontal printin Hen by an effort of will make to the them in a key unconted portion Smust hild up a new puture - The planing Diapan all those mysly the angle through which The

f. 101 Stoke Bouse, Stoke Mleming. leadily pymes can be finade & thing GALTON --- 1879 - hormal fisition PAPERS as reguls the latter queetin (perspective) I cannot by that I can provice they tatu facting cerults, kymothes that I can Intimuly to do it imagine the perspective appearance of liques witten in a plane melined Atta line of vision In all mental pretures

f. 10v Stake Mouse, it stuckes me that there a a muchat havan and Whe betent of the picture that can be contringlated atthe name Tune - That it is muchat analogno & an artenance project of which the organ concentrates study in small fortions at a true a long row of primes 4 Ken 's the flancing the (mental) eye along the 20w, a compliated

f. 11r dragram by turning the attention from me plat bandther the of the most airems flucturity him mu case is the anyone arrangement of the authine treal humerals . Thave thetched this to the her of my ability lung number fatteast within the pret thensand, and afternas thinking take the plan functs) is always thought of by the to the mon definite place to the serves where it has if I may they to a home and an individuality Thered horace quality this

I taying that when I am multiplying by the too large humber my mind i engrossed in the operation and the idea of bracky in the of prominence I'm will share that the pisifant the drapan Emply films the ananyement of pymes on a clock face and? am included & Thick that may hucken in fort the unconsums source fit - but I have always her utterly avalors tracourt for the abupt change at 10 and aprin at 12 x Similarly if I have reaking to

f. 120 Stoke Mouse. Stoke Mleming. then the month or day of the year it is always in a cucle in which the months are ananged and all dates are the lefened ather proper place in the cucle - It is unthe hoting that the point of Ascuration from which open to legand this cicle is always the same ing hlow darback december -Joapain in huttory - the Englich kings are thought

F. 121 Stake Bause. State Bleming. of in the depute portions ma myh chart which it und h un defficilt taplain GALTON PAPERS (Here Ful another chant serves for recent hybric history ananged smething like the authinetical since and each know event connects they with its own place in the

f. 13 hie - You will understand all these anaryements or diagrams have grow up quite inconscionely and spontaneously 1 I can pri por any putter aplanations I thall be happy bodito has you are at liting there this letter and any Jan Jon faithfully 7. Galton In

George Biddler QC f. 14r 3. Paper Buildings, COLLEGE Temple, E. C. GALTON HAPERS april 21 15/9 my dear for huply topm questions , as reparts the two of an approaching lugue Ihave tay much the same Defficility a procel - that is Jan

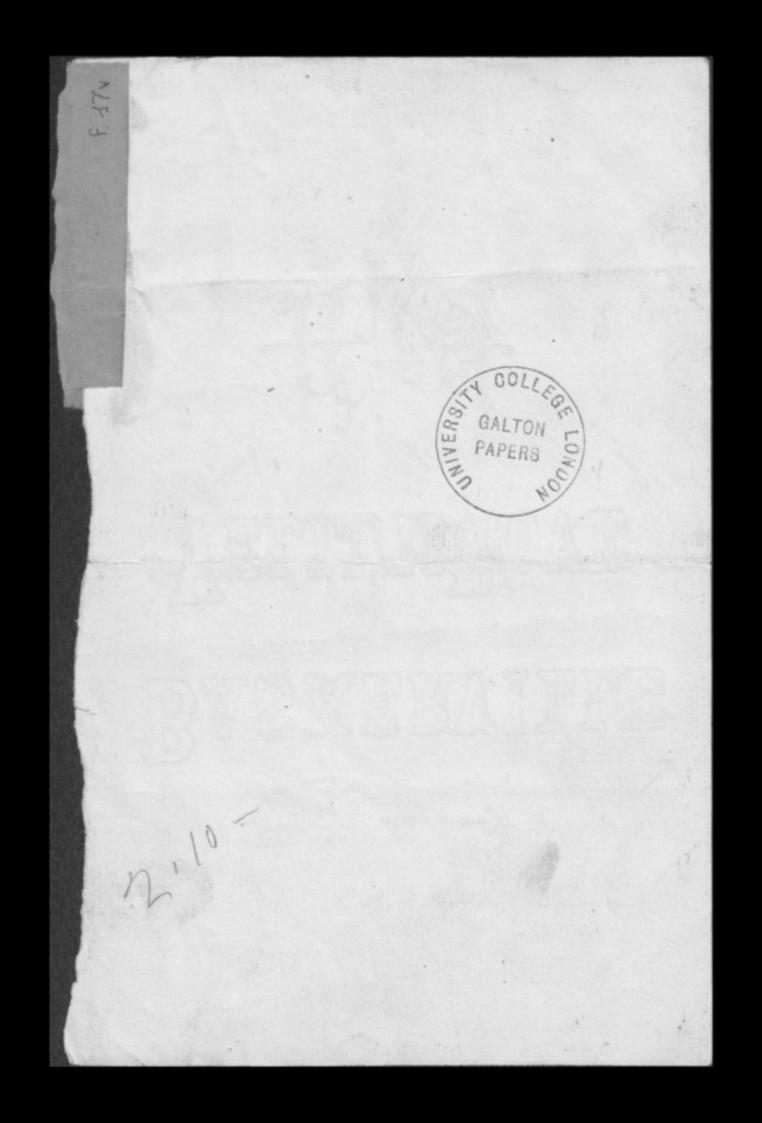
F. 14V de the com ipproaching jet the fronth in apparent myntan int so haterfactory the cases Julened to of motion withour Vange of mountaide much as the Eoner the akeel or an anow in Right

f. 15r the matin is try mend a continuons as the Intron of a real image mthe return as the Kended image I cannot be certain whether it is to when for the to although in time cases Jan melind & mapert is - I am

PAPERS F. 15V acquainter with for my menins method of Maning typical portraits stand he my carent y one coned establish the fact of a similar proces to the mend. Than not collecter any Kine Am or Juned willing Graphenuched you with them Jam fin ting 7. Galtin En

G. & Brother 14/4/25 of the year F F. 16 by June Shay anjust 01 Seft GALTON PAPERS Jar 7 Jeb Der * print

F. 17r Reonce & wroth My 1/8 Nature Calimn 21/8 Pagattentin Fill dark stranger line between 10×12 0x 110 x 112 2 Z 20 211-011 02) 20 432 mental picture of numerical series My Bidder 14/4/79



Bilder I aprildy Temple GALTON PAPERS Jun 15 - 1880 My dear hi Thanks for The copy hature antaining Im article which I chall read with part interest. Juich Ihad more leisure Toplan up the sugar sayely your truly Jung Middes I Galten my memori of my

201 18 Henrington Square. But 200 paraces. Leara J. 14 or 21 year Plat of land at and of Sarden soft deep by 22ft frontage. would be lat with or without hours in building Laure of 50 years at \$20 peran or the whole would be wold Fuchoed price \$5125.

F. 20V George Kilder Grawn min Maneonely PAPERS GALTON word they were the Champer of S. 13: 200 . 20 com were brand below.

Sir, we have been boo Moscon Bobon Kine I have just read your able article in the " Northightly Cerien" intitled "Mental Imagery " Jun laboars in this branch of plychology intery me particularly. A Russian man of letters, a novelist and a ma matist -after a career of twenty Jean _ Thave lately commen Ced the polychological Study of the literary creation, Faring ny Hay at Paris, last spring

- 21V Communicated the Skettch of an enay to M Ribet, extor of the " Rerew phi lasophique" as well as to several other learned Frenchmen Who Share my ideas upon the experimental and partive method. Allow na, Liv, at a fellow_ author, to address myself to your When the plan of my anay is more claborately drown out and to ask your and and counsel for the programme of the questions I shall have to formulate and to put to the mast renowned

nordith parts and Namatiths hatt in Kuttia and abroad You falless great experience in this _ since for your Hudy of Mental Tmagery Jan address Yourself to many offerent per I thalle moreover beg of you a quite personal favour. The Twenty years Thave publithed drainas and novels from that my imaginative faculty in con piterable for a native of the North. I Combine eating, I

F. 221 create personages and facial can orthas, I can not only at any haver incagine, a figure the intern of a haute, a theet, a locality or a scene ; but I can alko acaustruct fresh and with the materials I find in my memory. However, all this 17 by no means of the nature of the phenomena, Jaa Sterik 12 your article. I Camot and I never have been able to figure to nappelf a

perceived Inage with the clearness of a Viral deutation to project it an paper, to fix it with authores. Therefore, in spite of the of rious of entres and readers an my "photographis, discriptions, I do not think them dufficiently cast. Have I the germ of this faculty or not! I believe - I have if it is more or len interent

f. 23v in everyone fau, more than Augonie, Con indicate lo ne haw to develop. my imagina Tive niemory , and this render the an immine ferrice. My age (44 years) over not alarm me . T Continue to exercice vig inagination. With nuthed I am persuaded . Thank be able to perfect my creative pawers ..

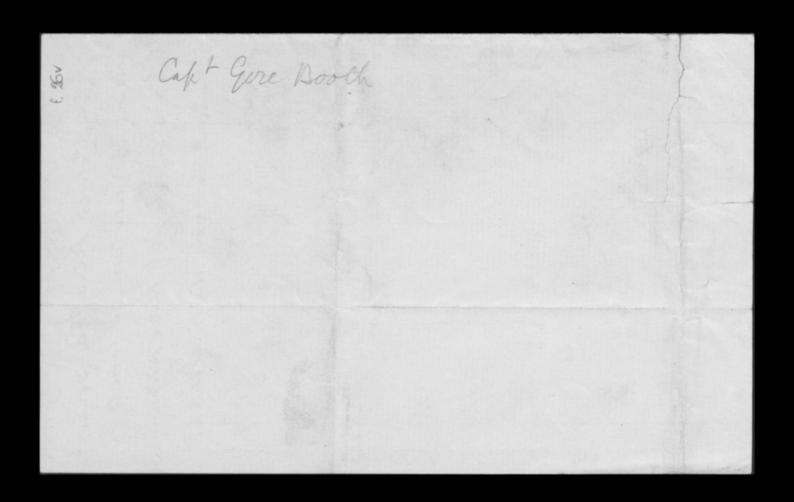
F. 245 Jam cauntils, dear and honored for they fire he a new artithic distance. Stely an your benetalent interest and beg to remain Mun Very obedally J. Bobory king PERS

F. 24~ Marcon Russie P. BOBORYKINE Miassnifski, margan Ermakoffs log. 6. 2 GALTON 12 mg 11HOL

f. 25r Gon Booth hordantice Hour Partick glarps 31 May 1881 Dear M. Salton. my and - two arch Swith There bank was this here last week. The h I have a alk on henry and has bory much interesto in Whatthe told her about her own hethod of Lemembering hunter which Corresponded Sa Certain Extent with his The attan on Thave Son her

F. 25v Do had the Lam Fort of hemorya, mytell. Suice fory back & down The has first - me your paper or hanalored humbers and a paper Spill up Which I send Stonk Case it thay interest you and I Thould like berry hunch I lead anything that may have been witter on this subjector I take a. Real-deal of interest in it. Telieve ha Jown hucery hourdonthe Capits.

f. 26r I you could Aus the Some Japon of Justin Shoutste Stad Stry & get them ausure if Scon acron any heculiar henories . : 20.5°



50,WELBECK STREET, CAVENDISH SQUARE, LONDON.W.

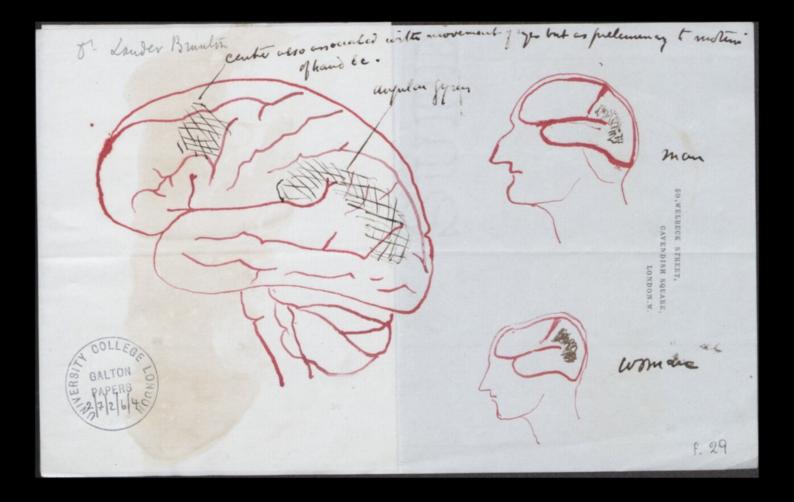
Dear mr. Jalton mr. mac-D. Crichton Browne o also alister have asked me to ful up a paper on Visual. long. Thave Therefore I one it a send it on to pro There been a truck with your observation that women Jeen to have a greater faculty for this than men It might be inderesting to learn how for this family is connected with a preater development of this gyri associated with the sense of sight ferries found has centres ass occaled with movem yays. Those of the angular gyrus and more particulary and coated with sight as a sensation. One would expech that the power of visualization would be an oceased with I weldment I the angulac Mens

X- Lauber Brunton

F. 27r

march 26-1880

That great proportionates development of I would come a corresponding wie in the posterior part of the skull For some time back shave been in the habit of fancying that development of the posterior part of the skull copee. callas regards height was associated with viewal memory. Maduals find that the skulls of umen and as a tule more develope) in height postering than those of men . Perhaps the enclosed draptam may under my meaning cleaser Jonir ver ting Thander Brunton



Johns Bopkins University, 1.301

Baltimore

LIBRARIAN'S OFFICE

The association of certain definite colours with certain litters of the alphabetdates from my very early childhood. I was taught to read at an unusually carly age - to early indeed that I can not remember the time when I could not read, and as for back as I can remember the I do not think I ever emsidered it annuel, a spoke of A to any one until, when a boy of probably twilve or fifteen, I mensurprised that I never afterwards alludet to it having a boyish shymp of tring throught in any way putar. Many years after, when we were both mere, my former comhavin (this and now a surchant in the Look recalled the fact to me, and said that he had met with a gent leman - I think a South American - who had the same pice. hanty, and who wishes to compare his colours with mine. I think they agreed to some chight excent. To the heat of my recollection ? have menter the matter to any * Possibly from this early reading came two other

visual oddities of mine: I can read a hope white down as well as erect, and in reading ordi . many print I usually take two lines at a time. I can easily read alond at moderale efferd an orfinary lime of an sword 200 this book + reade the lime following.

any one except to my found and now to you. I have never from this peculianty any thought, nor experimented upon it, no altempter to modely it; and it remains, I believe, exactly as it was when I was a child. Hence, doubles , in altempting for the find time to mole the facts four, I chall. most likely omit many points. I have never followed any art or calling neiphating the culturation of The colour liner. But I have by nature an extremely keep perception of the finist shades of colour, and a releasing memory In colours, I can not has any object even things trivial or offensive without involunchanty orthing the hours and timts and this combined offects. But with all this I have no artistic fifti; and my fin altempts at painting for my own. amment to not even reach mediocity. The colour association ? refer to is thely an association, not an illusion, When I look at a perinter page it toes not appear to me varigabit. When I an reading with interest and close at. lintim. I take little a us ergnis and

Johns Hopkins Aniversity,

f. 31r

GALTON

2

Baltimore,_

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of the associated colours. But the instant I look at a word as a word, a group of formers chara chers - (whithin in my own a another lunguage. Known a untre own to me) the associated Colours present Thems lows. For inshance, I I were to bee in a paper the Florida orange-curp is a failure, as I should be considerably interested in the chaliment, I should probably taka no motice of the coloring of any of the words. If I thought of the wange as a fruit, a remembred my gathing them in Florida, I should be the print in my minds eye (unconnected with the word / in it's natural colours as if it was before me. But the moment. I dricht my altentim "in com mones tata its arbitrary coloms. These colours are almost whilly in dependent of the meaning of the word. Some exceptions to this I will mention Labor. And They are Entrely independent of the lound. Thus bead and bread

. f. 31v have exactly the Same colours; to pour, Sour, Through or. Pere is while; pare scarlet and while; pair, garnet. K. The colours most marked - or rather I should lay all the colores with but elight exceptions, belong to the vould. Of these a is strong deep ret " while " glory black 1 " dull black 0 blue (interes and han parent) U 11 Digraphs Light- bink (hight than a) ea æ ac œ oe gray Rack oi (oy) red dish woll. au Jush violet. ua hale uddich violet eau a colour which I fear I shall ar not be able to hit -. It is rearest a garnel or carbuncle, or dupred currant.

f. 32r Johns Hopkins Aniversity, PAPERS Baltimore, LIBRARIAN'S OFFICE grayesh pemple OUL brownish red (brick.red) aw (as in O. Eng. Beau) reddich Salmin eaw has no estour before a consonant: W as in wrap": but with a vowel . I adds a blackish w brownik hit. ew pale gray bister or defia ow hale yellow YE hale yellow guen en in sometimes gives a rocy but to It vowel. Thus et is pour white, while met is pale pink . I to notthink this is universal. I malore a coloned dragram ftm principal lints, which I have hit as nearly as I could with the colorus I huppind thave at hand. But I can not fim the daturation and hansparing. The ac is little better them a particle; but no combination that I could make word hit it. The rest are finity correct.

e, while, + I and O, Hack of two qualities I did not think it worth while to give . Now it is quite pop ble that Ann of then colour - improfilms may have arran from very early allocation. Thus ch may have taken it's heart from the word ficen; ye from yellow, and re from Blue. But with others the arthrany col. our quite workans the legenficance. Then red is some while word; Black Scarlel; violet black and white; white, giay, gold, Hack: pink, Hack. Verdure "is a while and the word; verdant, white and red; "rosy", black ; while roscate a have into 2000 - colore. The words Blue and green are much pala this 26 and CIZ shanding alone. In many cures, however, when The arbidrary colour of the most cor. rapinds with the natural Colom fithe Thing signifier, the chromatic in. priform is highlind, both asercrahms fulling into unison. This of I day the agure rault of heaven , the two re's seen to morease the depth of " tind. So the words "Scarlet tanager,

Johns Hopkins University, PAPERS of Real Ballimore, SI has LIBRARIAN'S OFFICE The home for the of our most showy bud, cames to me an imprettion of intener redness for buyand that given by any such com kindim as intense and vivid red." Some times, too the arbitrary colour super adds tall to and modifies the natural meaning. Thus the word mead a meadow chrony conveys to me the imperipsion of a field with pente Howers, Through fink flowers in meadows are not em ma here and I have never hen an English darsur field. In hink association can only come from The ca in the word. When two vowels come byother, the realt, as indicated above, is a comprome colour. When hat a kingle letter comes helman, the tindency is for the colours to hend; but if the volvels are faither apart, the word is parti- whomed. I have not experimenter to him the limits n nonations of this

You will note that my scale of colom is very limited. searcely formy by and rid and the and then combinations . It has not been made by my performent, for it cacludes the combinations that are most pleasing to me, as well as three that are most offinine - and my likes and dichtas in colour are menmonly shing I have no amber, no deep fine browns no don't prevs; and tubiaries are outof the question. At the same time I can not be through that I am spared the mixing of andene cremsons and puplis. This limitation aler Davis me, to a quat exclut, from discords ; Through in other languages they are more forquest than in English. of possible descords There are aon det - red & pale pun, as in Caen. ena hale-gun rud " " venal uye the r hale yellow " " huye (Shan.) yeu pale yellow oblue " " yeux year , hale yellow a violet , happy seists in no language. The word of all possible desends - red, white, and blue, which is in ever what The filing of a sow is to annoce, is only found in Eng. in a few words like adequate, aperture ; The hideous combination accu, as as time. Dacume, bing spoul at.

Johns Hopkins University,

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F. 341

COLLE

GALTON

Baltimore,....

LIBRARIAN'S OFFICE

It has always here to my most one of the mysterious dispinations of Providence, that France, The United States and to Some salunt - Guat - Britain, have adopted as then sympolic whomas the most dideous dissonance Know hchromatics. Upon three other two com. ties I will not presume to any colone the affect ; but I am line that the androual display of us, while, and the in the United States, especially on childrens longs re, has qually tender to Reep this people in them present chate of barbarian in regent to colour. The montion of the amline pig. mento is to me as unsuntable a dis konsahim as the Acrahic cholera. One would not - mummin, yot can not but beal that it might have been spored as.

I have written warch rambling

. F. 34 V Auff, and perhaps for wears onely into details. Ant- I div not - Know exactly what you want; and me malters of this kind it is helter to en on the live of multiplicity of forch. You may thank me for having apones you illustrations of the diands, of which I append a lot tany apriciman, as in the word Venal. A had word descens a had colour. Nay truly yours WH and Browne "venal" One would and but have that Francis Galton Eng. Lowin





Browne F. 36 Johns Hopkins Aniversity, her to BRARIAN'S OFFICE Baltimore, July 18 1881 Drarfin : -In a paper of your ni the June Fortnightly I while re frince made to certain phenomina which have a counterpart in my own experience. From my conhest childhood I have acroccated entran letters of the alphabet with coloms, in an altoption artitrary , but - perfectly definite way. Art - milie I hav maching man hand dir I learn that any other prisons has a hundra printianty. If the subject - prosessed whichfor you, I will, with pleasure, esther give you a cucoms handeal accountof the phenomina - (noumena?) - in my own case, a answer any questions. Very uspectfully W. Hand . Corowne Francis Galton , Ey .

f. 37r COLLEG GALTON PAPERS My dan Julin My dan Julin Man land lite pleasur jun hits i "i'le ali dation " Aut they Tout son annet it with the purchas "local henry ?" you had had to aching of a pareneter al leren after Derre & Leven July localized insain details of the

f. 37v herid is the have . a white sample of depicient local menory is in It. James / l. ", 23 - My). the "Jupits his gratures" when them is a plan. It have hite here for amandes any detail and love carely such his our pre pour revelention. ah my have there in I han a mental som to do I the my you and see the lignes.

f. 38r Shy are andre [1, 2, 3] her Roman I, TI, TIJ. and are dark upon a dute Jelen paried. Is a try I and play they this pore and law The board is thank a if my yo. vue gren. lite this I supply tonned with local herry this then stry is hypelle of being strong Thend. the The other hand I have remained Dats my gryming here to some

F. 38V familiai limit. a parie dite anjustility to her. I sur you there I things heave The here details you have the here ju' lan book and jour Lugal. he for they R. J. Burton all'Burton A COLLEGE GALTON CONO PAPERS

Johns Bapkins Aniversity, F. 390 Baltimore, Octo. 3 COLL 1881 LIBRARIAN'S OFFICE GALTON Francis Salton Exy. PAPERS Dear fin :-I have fint recervis your note of Sept: 17; and will answer it, in part at me. I suspect that I will not be eary to explain the exact-nature of the colon allocations to one who has not - the peculiarity; first as it would be hard to explain dream. ing to one who had never dreamed. In the first - place, it is in no lense an alusion : I am alwargs conscious that the colour is subfective" (excuse a vile word) and not ennected with the word as It would be if the word wire printed in coloned inte. It is in no deme like coloured inthe, no pringes of colour, nor the tents of the exectrum. These I at mer beergine as percent by the ordinary process of visio of course I sam aware of the fact That all colour is in us, not in the Styeit - that it is a certain effect when

F. 391 our nerves that we call red or the ; but this associated colour I feel notto be produced in the Same way, no by the Same nerves. Nor is it lette The colours of memory, or what we call in the minds eye". For unlance, if you recall an orange - Aupposing your colour hence to be normal - you have a perfect memory of the tent, it's hadings, it's light points of shadow in the monute deprepsins, it's gradation from light to dante, + 20 m. But this is inseparable from the recollection of the fruit, and is distinctly recognised by you as a menory. So if you call to mint the colour blue my, you recall it as a blue spot, a blue stupe, a blue expanse, - within a definite form of there, or a plane of blue of which you don't fin The limits , but will recall as a surface, and as a recollection. Now this does not fit the case. Sake the word teara : of A-calls wh an image to my mind - as of come it always dres - I such tionas as I have been prolles head bands

Johns Hopkins Aniversity,

f. 40r

COLLZ

GALTON

2

Ballimore,....

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or coronets, There are recognised dim alt areous by by me as memories, and I can change them at pleasure. I can call of the image of a tear of subies or of emeralds, and the colours will be exactly those of the real gens, butthey are in no way come And with anything without. But of I think of the word trana, whether looking at it or not, there is connected with it they an imperefin of glosey black, like fest. when fit, and two several imprepsions of ating scarlet. These imprefirms are in alundary, as much to as three of real estours. I don't call them when, I sont imagine them, I Sout remember Thim, I can't change thim nor dis miles them, except by withdrawing my attention from the word. I have no control over shim whatever, Exceptthis .

I ful more and more as I at. tempt to explain, that it is like at. tempting to explain the effect of a minor this or diminister Reventh: if your heaver is sensitive to me.

F. 40 v Dial infrefrins, he throws it all already; and if not, no words can convey the meaning . The meanent - approach I can make is this but it fails at an openhal point :- told a snowball in your hand ! you be and recogniar it as a white globe. Now imagine it love. colour, while you look at it. In an met and you see it (in your mints eye/ firshed with roce; you see how at the highest light it is almost or quite while, how it geadakes into rester on the chaster disc. You de how any letter at ains or afrects ofen It would modify the trac, and how The hans beening of the makeral enables you to plunge your vision (apparently) down with the colour as you could with to with an ball of row coloured of ague Enormel. All this you can de, if (as I Ruppour orton-resim be normal, with the same unering certainly that you can imagine a chele affer or a Lynan, and with

Johns Hopkins University,

f. 41r

GALTON

Balfimore,.....

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herfect wivedrup. Now this is much The character of the associated colours, except - and I asmit this is a moch impertant "except" in the one case inayination, or dissender from the strices at will, and en the dissider from the strices the armit, in the other This are not recognised as applied fare -Inced by the magnaking, and can not he dismifeed except by dismiping the Mil. of allention, I am afraid all this is egnolum per ignotions ; but after some fiver of the trow " on Mr. Sapsea Lay , this is about as near as I can get. Is beinging The unsersable. I can not enceive of any condetins under which these associations could decerne, a affear as other them This one. As to the revoie, or half-sheps mep" I can't say , having never treed. I think the attempt to experiment would arrive the mint and dropel the revene.

F. 41 v

When I have a little more lecius, and a colour - hose al - hand, I will lend your Arme discords. There are any, however, in which you may be abundantly grahifer. Adjudity dook at any colourer hand bill, particolourer bunding, anangements of ribbons in a habirdashers or milliners window, and your chances mill be very good. Frescord walls and certings are good places to look. Failing these, later any popular work in chrometics with coloured Mus hatims , and lord for Harmonious combinations of colour, and you can hardly mile. As you hap along shop-wondows , or preture galleries, not nothering hundredarly, you will feel something fag you like a low -This book, and you will be what it is . It- This moment , writing at my deak, I am hurt by three descords close to my eye. First there is a book with bottle-green evver and vermelins edges; Record there is the Service and cahalogue with blue gray cover and orange label; and third there is your letter with vislet ink on deep. the gray paper.

F. 420 COLLE 4 Johns Hopkins Aniversity, GALTON PAPERS Battimore,... LIBRARIAN'S OFFICE So answer another question of yours - no, I have never resultant nor have any conception of any colour lying outerde of the ordinary estore. Scale a three formed by the coloring of the Muchum with the addition of black, white, and fample. it's to my letter, since you are of ofician that the chalements in it one I interest, you are purpictly at htmly to publich, if buch is your pleasure, with the name or without. Only please chan it I any anter andrefers of iscpupin, as it was written with a minis more encerned about the combe. whim of colours on a alab, none of which would come quite light - , this with the combination of words in Lintinces. One during kendman , which I drinly remember, I think would run bitte Low how this : - As for The invention of aniline coloms, I com only love whom it as a furmitter trial of our farth, like curthquakes or the Asiatic cholero."

F. 42V My official rank in the Johns Hop-Very haverely yours W. Hand Browne P.S. I have the degree of M.D. (from another University. I only mention this beaux you siguie particularly dont. and not guilty of a for less exensable descourling in addrefing you as teg. ?

J-Crilla Monthe

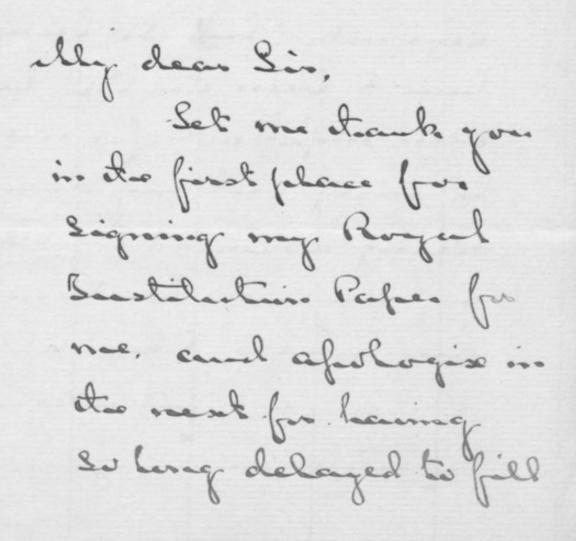


7, Cumberland Terrace, Regents Park, N.W.

F. 43r

She Black Sim Kotel

bandigan. Janey 5 1880



F. 43V

Sources of Angland 28.

afe. your Scheelale of Questions. I was auxins to stainta over etere questions in a bearing every and and to answer diens confully, but So busy have & been start it has been informible for me to carry out may design. Being asland to failfand my answers to stern any horages, I have replied & stream contract adagante seffections are a lassical and

F. 445 PAPERS 5. fears in a slip-shad manner I have found it infrancticable to give short answers to Saache for seculing inquines and & lacon stanger forthad down on Separate sheets of freefees, the observations stat scal gassland Suggested to ne. Sless observationes are. I appreland, Surretime amostalligtle and offers voulenent and illegable. It is faist possible borevere etacat

f. 441 in this bottle of trasl. your many find a needle of worth, if you have the mitrefradity to search it over I dase not transt mappell to connect may mates: of & baied to do so I should probably destrong streams. Sharp are danafred despected with all their original Somes upon their beards. Slass es well as deir -

f. 45r D. Crichta Browne. PAPERS 7, Cumberland Terrace, Regents Park, N.W. all personaling best inevitable septan gover must execuse. St guier non. bassure your Socieca pleasure to cardeaverer to cail your is gover interestrong anivestigations, and your manast and heritale to apply to me if Seens he of fronthe Service to your break care may collection to any peasticular famile, an

F. 45V

Factoriand Tresser.

estaid your desire nopolander. I shall be harfofay to distribute some of your Sledale. annaget featons also around give trast. watter accores. See from mary beachs and factors & cannot and Saffely gover will references bart I might help and stacet classifications one may seture to train

F. 460 PAPERS for of course brown to case of the control Blake acted assed to get Lattings from his own mental vinceges. Brierae de 6 Docimento book on flallacondiers contains a mess of interesting represention en stress folessonsenses in Sauce and masane moreald, and Worealts

f. 46v Chapierlagical Ragelakagy affreds some valuable histo. Verseal bead Curions lacolluccioalinos of varion. I care more wandering ais brales, on official deaty best may caddress is alsonging at Generalical seconce trille quest esterno Jorans much failtafally J. Erichten Brown Shences gealton ing

Crichta Monne F. 47r J New / h GALTON PAPERS 7 Crubeland Serveres Regent Park. N.m - Sd. CJ. C. 200 elly deen Sis 5 carros paren cis torses cand seale le Coffy of & can distribut Some Selectures

F. 4TV for you as fell you and any offer concerp. hat great esteen 6 caro grass most failt fully J. Collin Burne Gameis galter Cy B. R. S. S.

S. Busk PAPERS 32 Harleyth Dec 31 7879. My leargabler Haney much auc enclosed jour paper in Ime Reperts I have had & make to the Home Mie - Joo m Crop trhis aids with the much ldified - thankower endeavoured & Tumple, the heating in the best hay Hould Am Jun key mis And Bruch

Nev-arthur Butler, F. 51r hug dear Frank , I am a very plain uninteresting person . Story, god bleft you, 9 have hour to tell, Sin ". no glaste, ho pleastones of any kind will proceed from the . S GALTON F Houly for could get hold of high Coloridge, d. of dord Coleridge, the sees or saw visions in daglight and at all times you night learn something of this toon the hature for

F. 51v The question which is now interesting we is , Why should we see these bicious montat right ! Thether it be a creefy ghost of many centuries antiquity, on the page of print S? I read before going to bed ? Doubtlefs there is a simple physical captanation : but to lay that you are more lkicked at night than in the daytune, or that there are

f. 52 Jewer Mings to occupy the wind, De thas busies itself with its our creations, does with Recon an adequate laplanction . I candot produce there hunger in the day, loca of Sclore my eyes, and shut hupself in ale clourt sound. -proof room. Pertove to Sour ! Ever Jour off. Agnitter Driel. Dec. 16/79

George Erez Batter F.53r A GALTON GALTON Brownlow Villas St asaph APER 40 N. Wales May 13 1879 Dear Uncle Frank I send you enclosed a few notes, as you requer ted, on the subject of mental pictures. Tiddeman and I are working over the ground with the aid of the unpublisted 6-inch ordnance maps of this district, putting in the boundaries of the alluvium of the rivers clwyd and Swz

and of the Carboniferons Limestone, old red, New red, and upper Schenaus. It is very interesting & wholesome work, in Spile of occasional Showers. We shall shortly make an exploration & draw a map of the Cefn caves, which have yielded a large supply of river drift, mammoth bear & hyena bones, and stone implements: and may still contain some more.

f. 54 Please give my love & amt douisa Yours ever Sutte GALTON PAPERS

9. g. Baller f. 55r The year, whenever I have to view it as a whole, either prospectively or retrospectively, appears to me as a ring of large size, viewed by me from that portion of it in which at the time happen to be - thus ang fuls 2 June Sep. Allay Oct April Nor March Dec

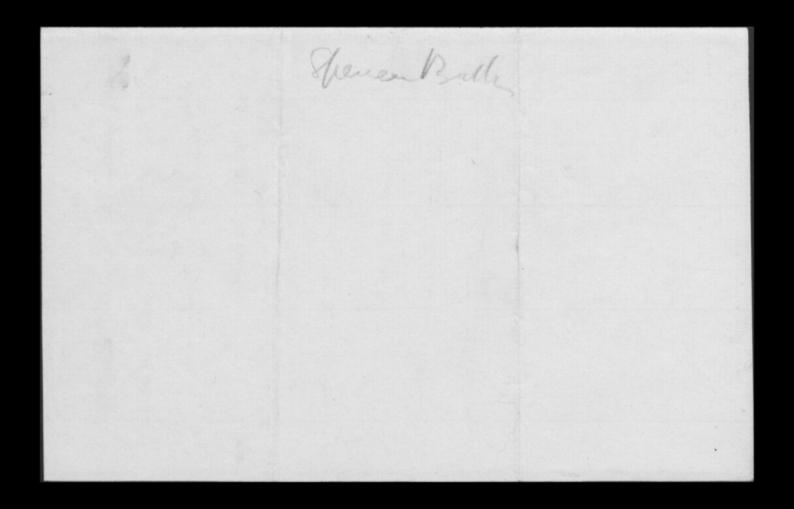
Whenever I think of react September my mind travels to that part of the ring where this month occurs, & it goes there via summer AJ think of last Sep. tember I go round by Winter. Successive years, if thought of as units not livided into months, present themselve, as a string with divisions at each winter or 1st of fan 3. at the centuries comes a tride partition not occupying any length of. The string but extending

for in the other two dimen-Sions at right angles to it. I find it necessary to bear in mind both years & months at one view, So as for instance to simultance to simultance the a clear conception 13 of June 15 1815 and november 4 1033 have & picture the successive years in a coil or series of rings. If I were to try & force myself to imagnie them in a Continuous straight line thus prof phanho I should 1015 1017 . Fo lose all feeling of winter & Summer, and all that

winter & summer imply, although I should perhaps have a better idea of the relative position in time of the two dates considered. I have however a bad memory for dates, perhaps arising from this clumsy method of idealising them. The letters of the allphabet affear coloured as follows A. ystlow B dark blue nearly black, C ystlow D'black Esblue F green & orange Hkink I white Jorange K dun L black M crimson N black O white P blue Q yellow R brown S white T black Udun V green W orange XYZ all gilt. These colours only appear when I think of the letters singly as abstractions, not when I hehire then in words arranged in words. Also I must be in an idle humour of mind to be conscious of any such appearance.

2 Margun dans hu 10 Nov. 1079 Mytens hank , There aneck the Henrauture. formed, Smell not, in that spat, multips 4 by 4 fyinger. + I think I can make fying nore about peely . he spindly to handsof parting is I kink Atilatalle after to the nature of the things moved . Shink a Una for phins attaches to given protoged start of the facety in me. We much signed our mit ~ hope don' is better hatten

1.51V to sal more . We form , when we for home , that way that had die tet morning. Her french is known morning. Maty his quite a bat throat fle membrans type. my Aution hel Jene Anthen What a hild by for the La thays . PAPERS



f. 59 Kunten ort aller convertation 2 sent E SP.B. No05/19 Can see and retain many ficures, can multiply 4 by 4 mentall with Sele industrial practice, the operation proceeding without in the wind liter a Same upake thas a tenacion memory to ficure, used formers thele cheft - in one or cation at a toadhide statics with a brother have, no chefe board they both placed a game light through mealath, Doer net doubt but that he could in brove his bove, in their. Can recall persons of near a well known relatives, will bet they are not whole ander control certain well tommer altitude, being sticking forents. The mager and quite defined a the colorus material Can carz furniture in the Ecollection & con late (forhave the effect of proposed changes. In land scope alterations the power is not scorely but is then clear. There is always a head of the fative in doing this for my type ther, my for the whole day . Shencer Batter A COLLEG GALTON PAPERS

Spener Butler f. 60 r GALTON E pulian Will , Harrow 237126140 18 pars 1800 My lean much , thank you for the number of Mature, which is very interesty r mafring. What mafinisis me most is the connection between rumbers & colour. I wonder if metaphynis will ever beame an a aunt Julie . Ym are preparing the way for this, if ever it is the dane. The franching introspection

I find out what is going on a benj done within , is to me like a diffinth gymnichi stat. Clearly training senders the bordy capable of great mascula feits, ~ might to the same for the mind . Would , however , the sent dispose tomakind of the seperto for other + Afferent mental feats ! i.e. muld the mandes sherthered by the introspector Stervices be strengthend also for the art of himy , + acting in the regular in expension of hige ?

f. 61 and would the mental mascles used in the intropentive steries After shap or be sprined !!! come to the constanting, when I The what was calle metallying at antige, but this, if anything, muld brive me mad, + that I will always discourage other people, in whom I are incensed, from the start . But if then people can a with pursue the steraise , they may become public bene. -factors ~ mishuctors . // tom Spencer P Bulter

F. 61v A hundre house for us is a the tapis your . We are strong this know, I had Antwick will not sell on (kremme) prant in improving kase . And we are drawn to think the mostments of m Aust monies by the great side mi down Waterwork theres of which we hold some . We an mit the hust monits in a louve for the purpose of reapartini and then that GALTON E

De Candolle Genive 9 ouril 1880 GALTON Mon cher Monsieur Depuis que vous m'aure envoyé vos interessants opuscules sur las allociations d'idees, naturelles ou anormales, j'ai cherche à voir autour de moi si ces dernières sont aussi préquentes que vous le penser. Dans ce but j'ai parte de vos observations à quelques personnes et j'en di entretenn una assemblée des membres De la société des Arts, dans la quelle Je trouvaient les detertes, les savants, des industriels et les personnes de diverses preferious on conditions. Je n'ai constato que toois on quatar personnes ayant l'habitude d'associer des idies qui nont aucan rapport natural, comme la forme des lettres avec une couleur les chiffres avec un avrangement materiel Vétermine, etc. Une seule de ces personnes M'a para mériter une grande confiame, parce que cette un ingénieur, mathématicien exact et vérilique. Une autre était une dame, non rans capacite d'observation, mais

F. 11 il m'est arrive souvent de constates que l'imagination joue un plus grand rôle cher la femmes que cher bes hommes, saus parter In desir de parastre ou De faire de l'effet dans une convertation De raton. Eufin for autres personnes nafir Maient par clairement coqu'elles diraiont. Malgre cela je peuse que la hisposition à unoir des chores qui n'out par de reports reels est aver faile ther Momme, at Intour qu'on peut la revelopper par restainy amateurs et les charlatans qui aiment. Les Vont la preuve Associer trois ou quatre kis la Junassion des vois d'Angleterve, à Ver panneaux Juccessife d'une salle, et la lidizon de fera entrete airement par ménuire. Plus on se liver à le genne Venercie propre à faussen l'esporit, plus on y devient soupte. De moty. teurs sens, mais par leurs letter finales. Comme il y a en tonjours les poètes, suntone

£. 2 lang les temps anciens, il faut que Thomme ait une disposition regrettable aux allociations fausses per faitilies. Les sciences combattent cette tendance, mais alles n'age's. sent que sur un petit nombre d'homine et un nombre enlove plus petit la femmer. La plupart des préjuges tienneux à des alioniations d'édées mal concures, et nory Voyans que des préjugos réditules régnent on du moins escitant dans des pays civilisés. Yai cru voir qu'au Angleterre on craint le vendredi, les salières renverses, autanc it plus peut- être que dans plusieurs pays. D'ans line famille de naturalistes, comme que des associations Medies, ces anomalies Adraillent this linguliarce. Te Hen Sens pay en mos le plus petit indrice Recever, mon cher Mousieur, l'agin vance I mer valutations les plus 2 mpraties Alph. De Candolles GALTON PAPERS

GALTON LONUO

HOME OFFICE, WHITEHALL, S W

12200

Marfallin Hui an tinn

ting. In Come

Causur topun enquines

They firmile a curins

untann of children filling

to travento - an resulty

pu - la Mic my unfo Withen town over

F. 3r

Syou look ale reach the malling andred putients formunale - doh mits auch the if special forme, of come have a lipped Characteretes fau -Ment for 8 part that Crimer of virtence & crimer of last ceitauf han Alt

f. 4 Coales S. Bartholomeur Horpetal Jan 25 1000. Dear Sir Thank you very much for The number of hature you sent me containing your paper on Visualised humerals". I shall be very glad To do anything I can towards getting you some more forms filed in by my finds if That will be of any use to you yours truly George Coates. Francis Galton Esg." GALTON 27265

f. 5r Twerte COLLEG 1, Cambridge Gate, GALTON LONG Regent's Park, A.U. Jan 212 1000 My dear Galton I have filled up the hapen to the best of my ability, but an afraid that the labour ducks out my agly MS will not be repaid by any result worth having. I read your letter in Nature with great interest. Without useling to detract unduly from the merito of the ladies who have made good Returns, I think that in a case of this kind

f. 5√ Feminines have special advantages. They - parts pon choice & partspon necepity, copicially in the case Attes who have families - have a pest-ded I lying a the sofa, a in bed, with nottig to do, & as they tout the have not the tendency, a, usuall, the means a education a capacity for untig not scientific publicus as you come do, a good deal 1 introspection is like tobe induced . and other reasons - eg. Jane connected with religion would conduce

the same result. and they would naturally find une pleasure, (a may of the would have une time,) in ans wing the questions, the an une could do. If thurefore, credit on intellectual ground is tobe give to come father goodup A this answers, I think it should be laying discounted before it is let against the mens account. I append the planing Ascovations, although they may taken as sharing withing but the mudding othe source when they Spring. 56 would seen to me to be a mumbor quite buynd human powerst Visualise - if I attach the right meaning to the word - that, (is this can) d suites 6 components of the number, with the minds eye, at the same moment. All humbry

abox - 1 ay 20 - must I should have they fit, be analogous to a hypothetical bas' in Chemistry - certain existences, & altopthen capable of bring dealt with for practical purposes, but not coming within the powers of Visin. I should have thought that it undellan bu quite cary to call up such familian & distant I malls as these of tarke with a Vir duch Vynears equal tothe reality. It is not so easy, but still I can call up with Ime depre & Virdup the Imells peculia to particular places, of which the planing ung to give as affinding types of as may varieties Asmelle - (Scull give thereas and fully & that it is my limited fthe faculty of discomment in the direction of the observer) _I auchfield . 2 Vale (dylesbay Inda (in Ruturn) -4 Cambridge - 5 Sector. 6 Pairs, distinguis is the Boulevals de for the harrow Play don't put me to shame by any Stute. While of such Asuration as them.

F. Tr A 001120 the me SHAPERS 50 GLEWOOD. EDFORD PARK, Dear the Galton 9 June St I am sarry I was not in when you called The optical delusion of which I chake to you was that of my son, a young lawyer now in New Lake, who pulaps wents not like to have his name connected with it. It is to may mind a remarkable care lucause

he is a through rationalist He has been bronght up a freethinker, - botto prients being such, and care his nurses heing caufully selected with reference to this predom from Super. stilin. the never heard any ghat stones, and I ain persuaded that he neuer had the slighter interest in such things at any period of his life the milite the is 22 years ber his years. the pt, is a Member Atu Inner

lemple, and helongs to a large law fim in New York. One of the mat unimaginatice, legal, logical minds; in huped health; sur rounded by friends; withinf a care of trouble in the world, - I cannot imagine any incidental or external cause for the apparitien the awake about six in the morning, which in New York is very much darker than here. A man was distinctly seen to walk across this room to the foot of his hed. En hart of the Pyine was ?

distinct. He rose up in hed and reached to a tox of matches near its head, Scrahed a match (which he remarked did uch light early but left a long line of phosphorescent light each time.) of course then was no one in the room. The door was locked tartamil not opened. He weat of it as a remarkable "optical delusion, and it made no other infuering afren him at all. It has not recurred. If there is any particular you toul) like to know I will be glad to give it. I have never hered of any other case in either of my wife's a my family annetter

f. 91 GALTON PAPERS INGLEWOOD, BEDFORD PARK. TURNHAM GREEN. June 16:81 Dear M. Palton, Probepa Horsbord of Haward University, when he was last year in Loudon, Told me that whenever he was very hungry, or rather Whenever he had not taken ennigh food, he was abt to have optical images. I think it was of himself that he related for else of some scientific friend) that in clossing the ocean he was reasick. Loss of

food and of appetite was followed by a trag of spectres through his Stateroom. These recurred whenever then had been an insufficiency of nourshment. The spectres were not porteularly unpleasant. They ched) always be made to vanish by eating a biscuit. Probefer Hasford and agreed at the time that semi. starration

right account for the abbanticis in menartic Cells. Pray to not take the trache to adknowled have some inquiry to make. I am acquainted with a lady in Camben Town who had when at school a very vivid apparition of a person, - as she believes at the moment

of that person's death dsewhen. This lady has been branght als a rationaling but this incident has Kept her a firm helican in individual unmontatily If such an instance woned he of any service to you it would be easy to have you get the story from her blen lifes Euchaithfully Moneur D. Couvey GALTON PAPERS

F. 11r 20 June St . By all mean's write, using my name, to Proper Horsford (Cambridge, Mass.) I would suggest, for fear some saga elements have crept into my memory of what he said I that you had best give only enough of what I want you to recall the incident & conversation to him. MD County



Traque, Tehnary 15. 1880. (11 Prague) To the Editor of Nature". Sir, In a recent number of your valuable paper (Nature Vol. XXI. No. 533) you published a very interesting paper article on , visualised numerals by Mr. Francis Galton. as the author invites the readers of Nature" to furnish him with further inform ation, perhaps my oron experience in the matter will be found accepted by him. at the outsel I much remark that, being an engineer I am accustomed to visualise lines, numbers and measures, but the curves, by which I visualise the natural series of numerals and of the years from about 1700 to 1900, have originated at some period of my early youth, although I am quite unable to eay. when I became aware of the fact. Fig. 1 shows the time of the immerals from 0 to 100. Below zero I form no mental image of the series of (negative) numerals, above hundred the line seems to turn again to the right, but it requires come mental effort to realise this fact, and, practically, the line ends al hundred. The numerals themselves to not appear inscribed on the line, there is only a certain and definite place assigned in the line to each umerica value. He line seems to be free in space, without any backgrowns at all, as to its parition it is not in a vertical plane, but seems rather inclined in such

(a position, as would be most convenient for writing purpous In fig. 2 the line is represented, by which I visnalice the years 1700 - 1900. Below 1700 all is Fig.2. indistinct, above 1900. There ceems to be a tendency of in the line to turn again to the right. Certain facts of history, e.g. the French Revolution the first railway etc., have their definite places in the line and seem to serve as a kind of land . The French Revolution Revival of Jekemian literatur marks. It is remarkable that both lines (fg. 1 and 2) are in come way similar, and still more remark able that they are so very much like the lines given in fig. 2 of the article referred to above. As a matter of course there is some difficulty in representing correctly these lines, for in order to draw them it is necessary to bring them before the mental eye by a conscious process and this interferes somewhat with the true nature of the lines, which are a product of unconscious inequation. The Difficulty is obviously more considerable with a person whose mind is trained in what I may call mental gymnactics of a geometrical kind, than with persons who are more or less, unsophisticated. This, together with the more vivid imagination of the fair sex, will perhaps account for the superiority of women in visualising numerals. In men the products of imagination become soon obliterated by stremmons mental efforts to which most of us are forced by their accupation. By the by, did Mr. Galton not observe the fact, that in the the process of visualising either numerals or lones colours are a more promi next feature with women shan with men? at least it seems to be probable that it should be so. As to the origin of the form of these lines of visualisation

f. 1v

1) The method, by which the knowledge of numerals was imparted to a person. An inclance of this influence was given by Mr. Gallon in fig. 1 of his article. 2) The influence of the occupation. By this cometimes the forms produced by the first cauce will be modified. 3) The mental mechanism". It is with some hesitation that I append this third cause, but it seems to me that in comparing the lines given by different persons care should be taken to ascertain weller there is or is not some common element in all of them which should be ascribed to a common cause existing in all indiduals. Finally I have to excuse myself if I have not made my ideas quite clear, for being a Bohemian and not accustomed to express myself in English. I have perhaps not always used those terms which would have been most appropriate.

yours

obedient rervant

Wajnis



Spålenå ulice 2 nové.

f. Qv To the Publisher of Nature" The following numbers are wanting in my series of Manie 469 -472 - 479 - 494 - 579 Allow me to ack you weller I can have them. I am ready to pay for them a second time only to be able to have bound shore volumes of . Wature' yours truly H ajnis / Pragne Spalena ulice 2 novi

Waria Danini F. 3r Dec. 23. 79 72660 BECKENHAM, KENT. RAILWAY STATION My Quer Saltin ORPINCTON. S.E.R. I told you the stars night that I thought a fature of my numbers 100 100 good . If I had to do it I think I sh? paint a uniform Dark grey ground with a single hales line in it, something like a single metal of a railway line, as seen when standing a few yards to the left of the me I looking along it . The whole thing has'nt a definite scale I so I can't say gards or feet or inches as to my Istance from it . The outdene is rather hazy & the tens are woolly Kurts or Excusences at mtervals. I value thank

there are Labordmale lumps for the units up to 1200 15 monstringuesteble further off. "he week is also a tracht line of Somewhat he Lane Characte but it goes accoss In front of me ratties Ragonally & I am on the right hand Side. I can as it were thus Lee the fag lad of me week the beging of the theat out 1) the corner of my eye In the number pecture I don't loer See behind me + 0 is at my feet on the right had tide of me.

I have throught over seading and acc: of my work to the Fr. Acad. I after consulty plausher have determined not to doch She vays that I sh? only have as much space as 2 Mr. Ina" he Proceedings & no proof Sheet - that I con't do myself pertie in that space & ch We he sure to have errors. He also objects to flattery n- French by telling them What they assume as the that they have the first Acad in Europe - In which I raller agree - for I think now thay are not doing half So much as the fermans or loen ourselves.

He suggers my sending a note to her Astron. Nachrichten Which all astronomers see When I may write in Inglish . Eurons Succeely J.M. Darisin GALTON PAPERS

genn Darisfan 20. Po DOWN, BECKENHAM, KENT. they bear fallon, RAILWAY STATION ORPINCTON.S.E.R. Thankens from her malennan; the appears to have telegraphed for Mr Whitman because the was anxious & overdone. M'à Seens to be a little better but very weak I can't believe be is recovering. I start tomorrow. Cal Clarke told me that with a week's practice he learnt to multiply 6 figures by 6 he his head & remember the leult this the hight.

f. 6 a man in the R.E. office can maltiply 11 by 11. Will you sead to copies of y Juestions to Mr. W.S. Danin Bacet Southanpton ? Tois your lucary SA Dani GALTON PAPERS

f. 7r Anna Darwin GALTON 12 7 2 6 60 Dec. 17th Dear Mr. Gatten, Jenclose the veralising pater. H you send one to min Balferer Whittinghame Prestenkerk n.B. I think you and get it felled ap, also if you deed me another

F. 7v to 6. Queen anne St. I will get I der Farrer to fill it up; if you think it worth while hour versucerer Howe Darwin

Leman Darwin F. 81 DOWN, BECKENHAM, KENT, happelein RAILWAY STATION ORPINCTON.S.E.R. Oct 2 Dear Galton . Home, the author of the Precis of Tactics, is dead and the quotation is not gren But I have it in French, though whether it is the original or not). don't know. maximes de Guerre de Napoléon (Dumaine, Paris, 1850) p: 46 Hest des houmes qui par leur Constitution physique et morale. se fout de chaque chose un tableau; quelque savour, quelque esprit, quelque courage, et quelques

. 8v COLLEGE S GALTON PAPERS DOWR, INSX, MANNSX038 明明11年1月2 支生的11月1日 A S. S. BOTSMISSO bounes qualités qu'ils aient d'ailleurs, la nature ke les a point appeles au commandement des armiers et à la direction des grandes operation de la guerre" This is where Howe got it from Jespeet, but the stupic treach editor does not say where he got il from. I though it naglet be interesting in this point of row aunger others ; women here the visualizing power more than Then, and most people would say

that for certain things, like the Command of an any at all events, they were not so good as Men. your truf 2Danon I have not your card, but he but there was something a ct that made no think thatyou thought that the remark was made of Napoleon; it is his writing not said of him.

The following quotation night possebly interest you. It is Napoleon I quoted in Home's Precis of Modern Tactic, p. 15. "There are men who, from some physical or moral peculiarity of character, make of each thing a picture. No matter what Knowledge, intellect, Courage, or good qualities they may have, there were are nifit to Command : Generals in Command hinst be guided by experience, or by their own L'Darwin "luis" F 10r

10 POST THE ADDRESS TNLY TO BE WRITTEN Francis Galton Esq 42 Rutland Gale London COLLE GALTON

1) Distant

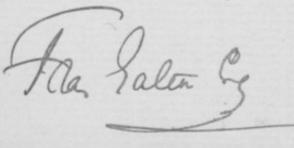
1, Selston Villas, Derwent Grobe, East Dulwich.S.C.

Dec. 3. 1879

(Dear h" Yallow,

Acrewish I enclose I'm Schedule of questions answered the best of by ability; I seen to find that of faculy of tesualising = memory = observation ; With however some great eception. This is particular noticeable In Amells, of which I have a keen percepti but apparenel a total mability break.

As heghing The Distant.





F. 11

Anthropological Institute F. 125 of Great Britain & Ireland, GALTON 4, S. Martin's Place, W.C. PAPERS 5 Deci-, 1879 Dear h' Yalta, I have delaged kepf to you have of the 3rd in order that I might better consider the guestion, it Contained. When I used the depression "I perceive no limit bester of biew" I alluded to the subject. of the breakfast table 'as referred to It jaw, but on consideration I do hor find the image aarrowed when the object or ophere is enlarged. For Instance I can still imagine myself on board ship, out of south of lad of an other rend or object. I do not find the circle of the horizon hanoved & of besualing process, & I can pieture the Enlayement as I ascend the lyging

P.S. Have you ever considered the power of ideal disuely possessed of dipperal people. The old day of build castles in the ais' analysed The sured. Whether the optimist views of me part of the day or the pessimist hiers of another portion, name r. enlarge the ideal besualy process.

for that purpose. I do not see a wider Marge bal I cannot imagine I perceire a Omaller me. Where and the guery "Can you attend Simultaneous other parts in front, on letter Icde + hehind you " I have some depridence to reply, less I misapprehend you meany + give an idadequate or mented repf. I think it helder to repf in the depatine although with an egged I appear to have (When samounded of objects with which I an be families) an almost smuttage bien all cound, This process of theating bis ualisig may hower he analogous tothen recurs & actual sight, where we appear to behold a laye surgace at men plance, whereas it the multiplication on the retima, Hence in the centre of a key fan ilias field y bier the mental and coations will nearly appear simultanen Clearf however I have not the power of tis waling the whole of the onles Durface of a lerresteal globelat me view

When I resultise the figure, 5+6 when the food fiff- oie is spoken, I find I do that almost automatically. I perceive that When I mention the wood thousand or hear it spoken the four figures at once fromp themselves to gether, & I find it guite inposite. If think of the date of a year, without Remember & bisually the figures though I explain Onyself in woods. The figures are always figure, though I explain on goelf in woods. The figures are always winted, lifter reize equal reesembly these common used on the To heady of heuspapes, I cannot however appreciate a back-ground, the append Simply in space; if such an indefinite lern ben have by indefinite means. Regrey I camor repf more vahaentives tapologen for the obscurg of the unit ong to a guils por which which I am not famalies. Im be the h-P. Vistant

8- Dyce Duckworth F. 14r Jan. 2250 1 COLLEG S GALTON Denti, PAPERS I dant for some = 12/7/2/6/6 jotting anent my an Visnalisny powers. 9 an afraid they are lata poor contribution to the Intifect .) can't better the to Van objects pertaps if I daw Tome

F. 14V ford accounts with Which I could compose hy men Expliilnees. Dehere me Jons ver fiithefully Ire Due laworth

Thoughts and yee Duckworthy ermal Notes on Visuchising. In adding Sum, to getter, or calculating per- cartage I alway conjure of the figures before me. I find it unpossible to describe my mental processes. I conjune of intermemories prit as I ti night Summer Amaden to walk accept stage. The power of apaintion is trementons in this procep. Exactrup is attained by an original keen imprepsion. Correct sy pright, and Correctly trained Senses have much to do with primary impressions. One Sonse, by apoliation, larsely apit, and conjurts of inpressions for, Mens. Man, I believe, children tramed Early m'object - lepons' will in later life have beener visualising powers, Catton faribing

than those trained by the methods, or not tranied . Ces a mile, I should expect the ardes than in single and more solitany children . I believe clever, observant mothers with beget better visualisers than dull still ones, just an I believe that Just trainpower comes very prequetly from the matemal side. It I am reiding a book or writing of any person Vannes, I invariably conceive the Jerm with or speaking, I often minic his accents or gestures to myself. (Jam a good mimic and was so at any harly all.) a characterité fentence a tapression

instantly conjure up the man or womm, T I could describe ministely the very dates I lest Saw Such a floor brear, and any Istail about them. I can recall the merest Istails in the persons of men & women now deceased for many long years. I can recall triffing points in the form, risging, Huild of ships and steamers I saw when I was I lean M. and could draw the con now -) Can recall odown Alwonn instanten inpressed me at the same de. I caunt state how 9 do So . as I bring the sutter by power of will into mental focus, all their characteristics I attributes come up along with Them, and a little more 'pumping' with drag out more and more destails till my pricture is complete. Geographical visualisation, I

invariably work at by recalling the map-image, often of thre I learne from a large blank maps at School. naturally, my medical braining has Caused my observing powers to be much developed + I was as a pupil, much in the Toriety one Athe best medial observes of modern times - the late Prof. Lay cook of Edin burgh . . In Medicine, much succep depends when having "Eyes, or no Eyes . Historical Visualisation . In my case, I am much apisted by picture and relice, musture specimens cti in calling up my notions. In some cases. my mental working is ven plan. I am stupid at remainding Sond stones or riddles, and I can only take in slowly long involved, Sentences, or Descriptions of

Sifficult subjects. I have lost the power of getting up poeting a prose by heart to a lange extent Since school Days . (This is Common anyth). I do not quote readily. with Exactnep. but then I am aware of my inchility, I know I am not right. I would not quote bosely in writing. I shall stive for the greatest precision in recording any point, and look well about for any fathacie. I should say that all my ordinary thought are accompanied by visue a sense- images , and Dimetine the majority of thinker would declare the Same.

Dree Ducloworth MD.

11. Grafter It. Picadilly

. Gustop Eisen Fresno, California . Jeb "16 # 1880 . et. 03 \$ lat Farcis Galton Esq. ton Esq. 42 Rutland Pate. London. 30 Dear Sir, your very interesting article on visualised numerals in Noture of Dol. 21. Nº 11. Just at hand. I am extremely glad to see that I am not the only person with the peculiar habits, to well described in your admirable eison. your reguest to get more contributions in regard to the subject I will comply with, as well as I can. les fac as I can remember it-has been my constant involutary, habit not only to visualise numerols, but days, Months, names words etc. In The Joliming I will defen to the appendit diagroms. Where referring in my meniony to historical events, tuch as wors, deeth of kings ete 2 alvoais associates them with an imozing teale mostly

divided up in 100 years, between which more important counts are more decidedy marked. all parts of the scole are not equally plain, and all The sections containing a periode of lov years are not equal, neither in size, shape nor colour. For this sefer to Deagrow A. as you con see the seole has the general shape of a V The perior befor Jerus of Nasant being sed, that ofter him yelen or green. heavy way historical coust presents itself to me under a certain colour, so for inst, seems the I years was violet, the French revolution very light geterwand The wors of the Spanish succession dark grey. The city of Caris appears light gelen in a bonn full , but that of Sonor as sed in a grey fild. Digram 18. gives some ider of my way to see the numerals. From one to ten oppears in a grey durky fuld very indistant and shadowy except of 9 which are cleaser. From 10 to 20 is a white pero, 20 to 30 yellow; 40 decemps in a curve and is sed. Ofter 90 every Thing is green and the nearer hundred The more indivite and after to every thing faces. Further I can not see.

The diagrom C. represent my idral right of the doys of the week. The 4 first days appear grey inchearing in darkniss towns thursday which day is nearly black with a tormich reflex. Friday is yellow and Saturday sed. Janong much broader relation to lenght and seems nearly Square and White. Every day has ito nome motion above it cleept widnesday out Saturday which are only morked by letters. It is curious That While in my native country when ofcourse I used to " think in Swedish Saturday always appeared under The signe of a sed & back beduciday under a dark grey O (ondedag). of the months in the year, belob. nov. and December appear to me under sheir own written name in a block chodow, but all the other month as while field July however is sed. I ought to air that When I count I always or it with the found of the numeral except when a add, when cartain & humbers such as 5 and 2 appear as cards but others Buch as 6,7.4. etc. as commonly written . of others duel as I and IV & see both the tign and The hear the downs . Sappears to me sed, 9 x 10 black.

F. 25

When thinking of the word good, i always see i alworps see a mon with don't face out red han. Aging the above few remarks may Jeron Jon I remain gruns Respectfully Justof Eisen OULLEGE Docent in Toology at the University of GALTON upsila Swedin, at present residing in Fresno. California. P.S. English not being my notive language, " hopes you will kindly excuses the mong enors in pelling etc. hh

Gustof Sisen P. 3r A 476 Recember 400: 3 30 200 100 00/ GALTON PAPERS HIVER Noch rey 100 7 gree A 50 30 mile 15 20: upen: 40 it 10 9 8 grey. 1.

@. · f. 3v W. Trundy Friday. S. Sunday Brillion red. White Monday Juesday grey. Jaikan Song.

I can see colours in names. In the first place, every words as it is spoken, either by myself or others, appears to me in small printed English letters, as if I were reading them from a book.

Commin Atte De Konlays and

Sabel Hoger

The colours appear to rest in the letters; therefore it is the combination of the colours of the letters, which makes the colours in the names. In common words, however, the colours are not to be seen; I may mention that I know four other people (a boy, two women, and an old man) who find colours



(1.)

in names; I believe that they never agree at to Colour of a particular name, - Sometimes however two of us may.

In the list of the colours of letters & names given on another pape, I have chosen hames which I do not know, i.e. that I do not know, i.e. that I do not accustomed to hear daily. The colorors have nothing to do with the person & whose hame it is.

(2.)



Isabel Florger F.2

a : white 6 = pinkish brown C = pink + d: brown C: green f: crimson 9 = oranje h = dark grey L : blackish blue f : purple K : bright blue + L : light brown m: greenish grey n : tawny + O : preyich black p: black 9 : purplish crimson 7: red brown J: yellow

+ t: brown + U: bluich pink V: pale green w: grey * I : vermillion 24 : La green Z = redrich orange

Isabel Florer

The colours of those marked + are not so distinct.



(3.)

f.4 Lucy = dark pink or lake Violet : light green with a dash of black . George : orange Dorothy : rich golden brown PAPERS mabel 7. Floyer 30. V. 80 (4

date is sehold Stamp The Sitheman Hoch dings The factor Eng. 7. R. 5 Quernom the Long The factor Eng. 7. R. 5 Quernom (1000 Here land pay) (1000 Lir . 1 Sir Than lakely learned things this maria Junele (Berna" High School Sum they of the viry interesting moretyations which you have been making the frances of mental imaging and hearing from her that you have preformed a series of facation on the subject - Sveature to address you with the Equich that you would think send me (in case non still would more statistics) a furgy our formes, Much should be any heappy topet f. 1r

when reproducing a clear runage of thing, Swrip and a with or of secury muca latty on closing the ges, any secure which shad been looking at incurdentes hefore, (meh as a promp of callle, vase of flowers tel the shutting my upos, all when blank, is except as a bur mather of manany from a montal make made home hand) I rould neither tale the number, priking orcolour of the flowers, or callle, booths in a row to a shutting the eyes - now lowered after some attration, & ofter prachany looking at views " Alhen the they the eyes, I can see the details the andly distinctly, gthe proper colour & approximate form say of from 10 or five horses, or a vice of uns flower, or a lione + Bor 4, bear to the these erre before the seges , with some effort, 2 or 3 seconds after closing them, I could not form any unage type merely the most flecting suffection as it wird of the the particular part of any thing that Inacherable deficitly in calling of about inge but that such adustainet advance can be made na few weeks by a letter attention dearly stars that it is more a habit of mind thais a liferen

filled the by any of my finds utureto in your markyihing I their Desach, poper is I hand heard ythem Think they may lead I forme important morpications in the method Ataching . the & Sunde lage you have published two prefes on the Datyect, me in Macaliced numbers pt. The on lacatal majey - Ahud rolen it - fasour of you would reform me where there are to be oblig Anyach my self. Imay my that found myself my Deficial with power of

f. 3r 5 -Amental constitution which mattes the power sonferant in Affrent people. In the me the unforcession secures, when made topupon the region of sense to that phonght where it becomes the memory of a fact, the mero of an experience, or the material ga have greatoning the photoprophic negative, to to speak at mee being distinged, mg no purther value & incapation A revenpeation - the will, in fact caunt initiate a reverse cumut q neros fored from the exclorate contro to the seasonium - In the other Class of people these alcose mental retirity is cheeply pircephire, who nather than

the sustaine + 2 ?? the labit of reversing a pure idea being suffected, the rained may casily revivity the same impressions in pour which the idea was trill up , + to a man, name will mandialy call of to life the secure impressions from which the idea of his sersonality me built up -In my case any rate # Shave Keen Helear sight + a decided e correct eye, for form &size, (Driving Jeometrie former early termety, & hand), but as would be reflected Scopy pakand Browing with Difficult little able to visualize _ Shope you are not think this letter tedious a imperticut, I thought any personal inferience, might contain some Thing suggestive - lefter must frienday my eddress into be the Edge Lawredon, sur Derty in case you should favor me with a reply Ince Sir your very over Aflower? PAPERS LO

reflective, in Arou Scusation reapies a layer pertof their keily life, then thought, Futho the prefer rather to live on The formed floor than the highly their photopaphie regatives unprint them Clearly & deeply Finith With fort, I can revivity them at wir , - 10 That menory Apast Quesations is with then rather a description Then the favor of meatal unagon Accus tom transisto two factors - 1th habitual altention to the impressions of the Acases at the hime, so that they are clarge

Glover Thomas Angital I sent a coly Oct 26/5.8 Freefalton Sig. Mil Sis, I rentand to addressign in dept. on the subject of menter imaging " having been ony much interested by your prouphlets + in the usuch of your indestigations + Mup factor har willing Thully you are proting and returner I sintere to write apare Front gon of you could thing obly me by from the me gy und schedales of Greesh Which from according to test some group preade with , +

Which Shave been unable to meet with _ Shave prostore or two entrusting example, I if I should get my autower. that Should Decen worth tomble you with fince us fail to forment the gun if you while, were shown to me by my prind Mup Maria Inwell, who has Ibelieve been in compudaned michyon on the Dubject-My you were recase my publing gu, Incu fit fruthefully your 42 Ruffand Jake Moores

Greenwood F. Tr marcel. Dear m falton Some letters I have her an I show That we frito : we try her is m lyber in Them , + ven Tur noie, o ere me incomente. 6 22 on fully svjes

F. 71 GALTON PAPERS for suring no vou peper on it repert: Sh. i pernely itusting to me. 9- beat. I mpily note in fint of in two poper nº 15 12 Janes. mrs. If aveis in not

f. 8r COLLER 12mus That. . Rhe Jagelres 7. Remon I may us well and that in colone fermi for Tike ne 64 mon you

F. 8v a gilaite this man , 1 wh my very seg.

be taken in order to avail themselves of the provisions of the Land Act. It was an elaborate and attractive exposition of all the advantages which the Act conferred upon them, and of all the penalties and disabilities which it would inflict upon their landlords. In short, it was an unmistake able attempt to convince the tenants that the then programme of the Land League would be virtually carried out in the Land Courts ; and it differed only from the later publication in offering the tenants the advantages promised them by Parnell and Dillon and Davit, but without expressly mentioning those patriots' names or "the cause for which they have laboured and suffered."

The Russian Government is stated to have under its consideration a plan for the construction of a railway, to be called the Russian Pacific line, from St. Petersburg to Vladivostok. The distance between these places is about 10,000 versts, or more than double that between New York and San Francisco; and it is believed that, owing to the expense of constructing such a line, the project will, for the present, not be carried out; but that another railway in the same direction will be made by the Government between the Rivers Ob and Amoor. This line would be about a,700 versts in length, and when it is completed it will be possible to trave by rail and steamer from Lisbon to Tomsk, in Siberia, and thence to Lake Khanka, near the Pacific coast. Great stress is laid by the Russian newspapers upon the strategical importance of such a line for the protection of the eastern possessions of the empire, and of its harbours on the Pacific.

An important decision was arrived at by the Strand Board of Guardians at their last meeting. The guardians have been in the habit when attending visiting committees at Edmonton of performing the journey to that place in an omnibus. Lately, however, it was resolved that each guardian should be allowed zr. 6d for travelling expenses when they went to Edmonton, the use of the omnibus being discarded, and the guardians to travel by rail. This scheme, however, idd not give general subfaction, and it was proposed that the plan of the travelling allowance be abandoned, and the old omnibus restored to favour. It was urged with some force that "the emnibus was a great convenience and comfort," and that "to an elderly guardian it was not safe to leave a warm railway carriage and go three-quarters of a mile in all weathers to the workhouse." Moreover, "the journey by rail was tiring, and the half-crown proposed 'infra dig." "After much discussion it was decided to go back to the omnibus ; and asteady, this is perhaps the best arrangement that could be adopted. The dipairy as distinguished from the safety of the guardians, however, would be better consulted perhaps if the journey to Edmonton were performed in a balloon.

Mr. Dixon Hartland asked the Home Secretary is the House of Commons last night whether, in view of the great danger to which hydroxycol and the public are exposed owing to the inadequate means of exit and the insufficiency of proper precations against fire in the various theatres and music-halls and other places of entertainment and resort through out the kingdom, he was prepared to introduce a Bill dealing specially exit the kingdom, he was prepared to introduce a Bill dealing specially or the safety of the public from fire. Sir William Harcourt Metropolitan Beard of Works has power to deal with both old and mew theatres. Six weeks ago he called attention to the matter, and was informed that they had taken active measures under the powers they patter this explanation. When the public understand that their escape from danger depends not upon their own activity but upon that of the places depends of Works they will no doubt leisurely vacate their places and bound of Works they will no doubt leisurely vacate their places in burning theatres, feeling that their lives are safe in the hands of the body upon whom the responsibility of providing for their security places in burning thequenters of other places of meeting beyond the tange of the activity of the Metropolitan Board of Works.

Shortly before the assembling of the Berlin Congress there was a story current at Constantinople which, whether true or not, was generally credited. It was to the effect that Prince Lobanoff, then Russian Ambassador to the Porte, having heard it whispered that negotiations were going on for the purchase of Cyprus by England, called on the Ottoman Foreign Minister, Safvet Pasha, for an explanation. "Of course it is true," the venerable Pasha is reported to have exclaimed; "the whole empire is for sale. What would you like to buy?" Needless to pursue the incident as related to its conclusion, but there really seems an ominous suggestiveness in the words of the Turkish Minister when we compare the then condition of his country with what we see and hear almost daily regarding this "extended empire." Persistent bidding for Heligoland on the part of Germany, officious proposals for the restoration of Gibraltar to Spain, menacing intimations the Eritish Empire been advertised for sale? Has disintegration indeed commenced? And if we do not concede these demands, what then? It may be, as the North German Gazeth, referring to an article by a German admiral in the Destrok Review, somewhat humorously says, that "in matters affecting international relations German journalism is deficient in the tact possessed by the press of other mations," but however deficient in tact, it has at least the merit of "brutal" frankness. It is clearly time that Government made some distinct declaration on the subject, and caused it to be known by all whom it might concern, not by words only, that no dependency or possession of the empire was for sale or barter, nor any colony to be left undefended while voluntarily maintaining its allegiance to the Sovereign of these realms. What are mere aspirations now may be nourished into substantial grievances later, more difficult to dispose of than while still in the embryonic state. But can it be that, to show a temporary reduction in the estimates for army and navy, which vex the soul of the peacemongers, a permanent reduction in the extent of the empire is to be consented to ?

Devonport Dockyard seems to have had a narrow escape from destruction. The fire which occurred there on Wednesday, although it broke out carly in the afternoon and was at once grappled with, held its own until it had done an immense amount of damage, and was only prevented from doing more by the exertions of about two thousand men. The cause of the fire was, as usual, said to be "spontaneous combastion." But this comfortable doctrine does not seem to be supported by the evidence collected by Sir Houston Stewart. It is now stated that during the Frenian scare some twelve years ago every bale of oakum received from the convict establishments from which the dockyard is supplied was opened, and in one two lucifer matches were discovered. This precantionary survey was discontinued after some time. Vesterday, however, an officer found two lucifer matches in some salvaged stuff from Dublin, and orders have, been given to examine all such material tor the future.

Mr. Justice Grove, in summing up in the case of a man at Norwich, printerday, who was afterwards sentenced to death for mandering a listle girl, made some observations on madness and crime which are well deserving of rensembrance. The defence set up for the prisoner by his connsel was insamity. But the only evidence of his insanity presented to the jury was that he had been repeatedly convicted of brunt assaults, and had already undergone penal servitude for ten years for wounding with intent to murder. "It was not," Mr. Justice Grove said, "every man of a diseased mind who was excused for crime on the ground of insanity; it must be shown that at the time he did the act he did not know it was a crime. There could be no reasonable doubt that the prisoner had committed the act—that he had? cut the child's throat; and then, as to the defence of insanity, before the jury could acquit him on that ground they must be satisfied that he did not know the nature of the act he had cosmitted." We believe it was Lord Bramwell who, in his evidence before the Capital Punishment Commission some years ago, laid down the raile that the only kind of insanity which ought to be accepted as an excuse for crime was such as would compel a man to commit the crime when he knew that a policeman was watching him and ready to arrest him on its comvission, and it is a pity that this male, is not more generally coplained to juries and acted upon by jadges.

The report of Prince Bismarck's having addressed a stern diplomatic remonstrance to the Russian Government upon General Skobeleff's speech is decisively contradicted in this morning's telegrams from abroad; and it is even affirmed in one quarter that the Russian Government has itself anticipated any such action by the profier of explanations on its own part. According to this account the Russian Ambassador at Vienna has within the past few days presented to the Austrian Government a communication from M. de Giers in which the latter expresses "regret at the utterances of General Skobeleff, and condemns all such demonstrations." This, if true, is no doubt satisfactory so far as it goes; but experience, unfortunately, has redered all such assurances of very doubtful value. It is well enough for the Russian Government to disclaim all sympathy with the Panslavist propaganda: they abounded in such disclaimers at the time immediately precedent to the Russo-Turkish war. But what we were then told was that the movement became too strong for the most "pacific" of Caras to resist. And the Austrian Government can, of course, feel no confidence that they may not hear some day or other that the Cara's successor is in an equally powerless condition, and must, with equal reluctance, place himself at the head of a movement which would other wise sweep him away.

FACES IN THE DARK.

Sour months ago there appeared in one of the monthly reviews a paper on "The Visions of Sane Persons" contributed by Mr. Galton. In this article that distinguished writer brought forward some cases which be seemed to think remarkable, of persons who when they were in the dark saw strange apparitions. Not that these persons imagined that what filled their vision existed anywhere out of it. But these phantoms had all the appearance of external objects, and were certainly not produced by any effort of memory or imagination, but quite involuntarily. One lady told how she used to see in this way, from time to time, showers of red roses, which presently turned into a flight of golden speckles or spangles : the roses being presented to her vision as distintly as real flowers in broad day might be. (And not only so, but the lady says she used to smell their perfume too ; but there's nothing like that in my own experience.) And there were stories of faces seen in the dark in like manner : not pictures in the memory, but seemingly standing off upon



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the air for the eye to gaze upon, and coming and going as with a will and

purpose of their own. What struck me most about all this when I read it was that Mr. Galton what struck me most about all this when I read it was that Mr. Galton

Purpose of their own.
What struck me most about all this when I read it was that Mr. Galton should think it strange enough to lay before the world as a curiosity. For all my life I had myself been familiar with phantoms of this kind, and, without much thought about the matter, had assumed that many if not most other people were equally at home with them. The polden spangles I too used to see when I was a child ; only instead of turning into showers of roses, in my vision they were transformed into flocks of sheep running rapidly down hill: as in a distant landscape. When the sheep got to the bottom of the hill they faded into the darkness; and then the tiny bright yellow spangles appeared at the top again, to be again transformed. There was not much interest in that, however; though I dare say, since Mr. Galton thinks so, that as a visual illusion it was curious. But as the faces shat appear to my vision in the dark, that is another matter. After having been haunted by them in a civil quie way for many years, I till find them very interesting indeed.
These faces are never seen except when the cyclids are closed, and they have always an apparent distance of four or five feet. Though they seem living enough, and not mere pictures or reflections, they follow through the darkness as if traced in chalks on a black ground colour sometimes they have, but the colour is very faint. Nothing more than a face is ever seen; and except for a fraction of a moment, perhaps, net all the face at one time. Here and there their lines waver, fade, and return, as if drawn with a pencil of phosphorus; but their is no phosphorus; appearance about them : their general aspect is as if their substance on poles is even seen in profile; and this also was singular in bearing a certain resemblance to someone whom I knew in real life. For (to me a semicarce, they are is no phosphorie appearance about them : their general aspect is as if their substance wreat mere member to have seen in profile; and thas also was singular in b the most remarkable thing about these visionary faces is that while they are always of a strikingly distinctive character, they are like none that I can ever remember to have seen in life or in pictures. Passing through the streets, we see hundreds of people with unfamiliar faces, of whom yet we could not say that we have beheld nobody like them before. Bat occasionally some very strange, or striking, or what is called original face meets our view and excites our wonder. Now my faces in the dark are all of that character. As I look at them—for there they are, plain to be looked at and ask myself who was ever like that?—I find no answer except in a fancied resemblance to some historical or mythological personage. Possible, Blake's visions were some such faces as these, presented to in a fancied resemblance to some historical or mythological personage. Possibly, Blake's visions were some such faces as these, presented to his eyes in bread daylight: I am inclined to think it may have been so because his wonderful and dreadful drawing, "the Ghost of a Flex," is precisely such a transcript as I could have made by the score, had I possessed the artist's skill and his memory for tran-scription. That Blake actually saw this "ghost"—that it was not, like many things of the kind, a deliberate effort of imagination—I do not for a moment doubt i for under my own eyelids I have seen many a face of the same awful family : some even more dreadful still, and all the more dreadful for being astir with animation. But the greater number of them are not of this kind; and it seems to me a very odd thing that they should in no case reproduce the features of any one known to me, but on the contrary strike the view as entirely strange and surprisingly "original." My faces in the dark are much mote often of meen than of women : they are rarely quite agreeable, but they are anown to me, out on the contrary since the dark are much more often of men than of women: they are rarely quite agreeable, but they are all extremely interesting (when they can be endured), because they look like the fleeting embodiments of some passion or some mood of the mind: usually not the best of moods. There are some very noble faces amongst these apparitions—I rather mean, expressive of a great nobility; but I have never seen amongst them the mask of pity, or love, or of any tender emotion. Grief the most despairing, scorn, pride, hatred, greed, cumning inquiry, envious or triumphant mockery—if Blake really did see these faces either in daylight or in darkness, he must have had much more than his imagination to draw upon when he depicted the passions. These apparitions are entirely independent of the will. The gold spangles and the faces come and go as pleases them. You may be awake with your eyes closed, thinking of the weather or the last change of Government in France, and, as a wreath of smoke might rise, there is a face in the dark. It is useless to seek to retain it for contemplation, or to

Government in France, and, as a wreath of smoke might rise, there is a face in the dark. It is useless to seek to retain it for contemplation, or to attempt to recall it when it has faded out. This you may greatly wish to do; for sometimes the phantom has a profoundly meaning, or appealing, or revealing look; but all your arts of imagination fail to project it on the air again when it has once died away. Only for a few seconds does it ever remain, and it never returns. But what frequently happens is that one face changes to another after the manner of "dissolving views." And the change is almost always for the worse. A face that begins by being strange and interesting, ends by becoming something awful or hideous beyond the power of description and the will to describe. Your curiosity may be as the curiosity of Christison when he tasted the unknown poisen : but you cannot endure to look upon *these* faces in the dark, even for the few moments they abide. But, open your cyclids and the appari-tion is gone. This also strikes me as remarkable,—that these phantoms only appear when the cyclids are closed; and that if you want to get rid of a particularly disagreeable one, you have only to open your cyclids and it dissolves. obe

It dissolves. As I have said, I had no idea that these apparitions were uncommon till Mr. Galton treated them as strange, nor should I have written this if they had not seemed to him to have some sort of significance from the scientific point of view. All that I need add, perhaps, is that though these faces have been my familiars for many years, they have become neither more nor less numerous; nor are they more frequent that I have observed, nor do they change in character. They appear pretty often, but they have never given me any disturbance, and I do not know that their coming and going depends in any measure on varying conditions of health or ease. Maybe they do; but if so I am not aware of it. Lastly, that my sight was not weak I must believe, since it has gone hardily through trying and almost ceaseless labour from my youth up.

MUSICAL PERFORMANCES.

MUSICAL PERFORMANCES. "Moso" seems likely enough to take a permanent place in the Carl Rosa repertory; and, apart from its richness in what are called "tunes" (though these "tunes" are not always of a rich kind), it is interesting as the only specimen ever presented to an English audience of the operas which Balle furnished so plentifully for the Italian stage. In Italy and the Italian operatic style Balle was quite as much at home as in France and the French operatic style, or in England and the style which he himself origi-nated for his own country. Of the three operas composed by him for Paris, two—"Le Puits d'Amour" and "Les Quatre Fils d'Aymon"— have been given, under the tiles of "Geraldine, or the Lovers' Well," and the "Castle of Aymon," in London. But until "Moro" was brought out not one of Balle's Italian works had been heard in this country; and it is interesting to see how strikingly Italian Balle could be when writing for Trieste, just as he was strikingly Italian Balle could be when writing for Trieste, just as he was strikingly French when writing for Paris. There are, however, in all his works melodic phrases and a certain melodic inspiration belonging to Balfe himself. Fiave, the librettist of "Moro" (author of some of the best *libretti* set to music by Verdi), seems to have been more advanced in the matter of operatic construction than Impartion belonging to make intervel, the works, the works of a solo (author of some of the best *libriti* is to music by Verdi), seems to have been more advanced in the matter of operatic construction than Balfe; for it is stated on good authority that the piece ended originally, as the dramatic situation required it to end, with a trio for Olivia Campana. Moro, and the Duke of Alva-the two former about to depart for England, the latter, in a mood of repentance based less on historical record than on operatic necessity, bidding them an eternal farewell. Balfe thought this termination "gloomy;" and at the second representation substituted for it the conventional and already worn-out rondo finale which since the production of Rossini's " Cenerentola," about the time of the battle of Waterloo, had done duty in so many operas, and especially in those composed by Balfe himself. Rossini con-tented hierself with inventing it, using it once or twice, and then leaving it to his initiators. Verdi, by the way, has never once employed it. His operas, it is true, end invariably in tragic fashion; but that would scarcely have prevented Balfe from bringing forward his prima donan at the end of the piece to make her sing a final rondo. Nearly all the English operas composed for Mr. Bunn at Drury Lane, and for the Pyne and Harrison management at Covent Garden, ended with a show-piece for the prima donna; and so attached was Miss Louisa Pyne to this particular ending that she used to introduce atthe conclusion of Auber's "Crown Diamonds" the well-known air with variations by Rode.

management at Covent Garden, ended with a show-piece for the prima donna; and so attached was Miss Louisa Pyne to this particular ending that she used to introduce at the conclusion of Auber's "Crown Diamonds" the well-known air with variations by Rode. Rode was already in those days considered old-fashiohed; and one is reminded by a celebration which has just taken place at Paris that Abber hienself is beginning to be so regarded. The Italian version of "Fra Diavolo," as given at the Royal Italian Opera, for which it was expressly arranged by the composer, is, it is true, as fresh and sparking as could be desired. But then the work, as already mentioned, has been renovated from the fountain-source; and not so very many years have passed since Auber took in hand and accomplished the rejuvenation of "Fra Diavolo," "La Part du Diable," moreover, certainly one of its composer's most brilliant productions, is still a favourite work at Berlin, where it is played with invariable success under the title of "Carlo Broki." But one seldom hears of Auber's operas being represented at Paris, their birthplace; and his light may be said to have gone out in the year of the war, when his last opera, "Un Premier Joar de Bonheur," was produced, and when he himself died. French music— and indeed music in all parts of the world—is now at once more-and indeed music in all parts of the world—is now at once gene-ratly, are quite solemn in their earnestness; and opposed to them are a swarm of opria-bouffe writers, the offspring of Offenbach. It is said that when recently Mdme. Genter wisted New Orleans with the Mapleson Opera Company, the public declined to hear her in the semimental seni-serious operas of Donizetti and Bellini, and exclaimed that they wanted either offenbach or Wagner. They probably did nothing of the kind. But the cry attributed to them is quite in harmony with the musical taste of the day. The number of concerts and series of concerts devoted entirely to music of the highest class, which are announced to take pla

or his own devising. The first in the field is Mr. Cusins, who coaducted the opening concert of the seventieth season of the Philharmonic Society on Thursday night. Among the important novelties presented were Rubin-stein's cantata on the subject of "Paradise Lost," and List's symphonic poem "Hungaria," both performed for the first time in Eagland. A new pianoforte concerto by an Italian composer and pianist, Signor Sgambati of Rome, given with the personal assistance of its author ; another new piano-forte concerto by an Italian composer and pianist, Signor Sgambati of perviously heard in England ; and new orchestral works by Mr. Villiers Stanford and Mr. F. Corder were also included in the programme. To pass from orchestral works of the future to quartet concerts of the present, chamber music continues to be performed exclusively at the Monday Populars : of which the attractions have just been increased by the return of Mdme. Norman-Néruda, who for parity of tone and delicacy of expression has certainly no superior among the violinists of the day, male for female. Nor must oratorio music and sacred music generally be forgotten ; and this is now represented both by performances at the Albert Hall ender the direction of Dr. Stainer and by the performances of the Sacred Harmonic Society at St. James's Hall. The latter are now con-ducted by M. Sainton, who has replaced (only temporarily, it may be hoped) Sir Michael Costa, musical director of the Sacred Harmonic Society since the year 1848. So much interest has been awakened concerning the principal incidents of his career by the news of this distinguished

[FEBRUARY IO, 1882.

Qv

AKtrity Job G. G. Wore 10,0 Dean Wofalton Michalion ! leforris to is in It culoris page 12, 13,14. Kurly return it to John Hullah my forvend housins J.W. R. has on this are copy four fulleting J. frace Jany 23.

S. Hall 39 Pourt St Borba Streaks } Nov. 12.1880 (U.S.A.S Manais Galton Eng (COLLED macalir (FAPERS) Shave recently read in To cuterest you article on the visualizing faculty - and awled to recall. The attraction which you with here had for me, Sence - after some Eplemence in Camplife in our American hved man your ago, first. Eujood your book in The Aly Travel Law lempted now to expects my pleasure, and add afew words. on the Subject which you have tash ?? f. 1r

f.-1v written upou . . . Those . for many Yours. Entertained the theory That tere might he a power in the brain or in the wellectual Substance of there be buch a bubitine Whech where the brain, to produce from arthur actual in pressions apon the matter. Awaybe of Thebain, or the utino; of objects which have no actual Existence of amiste no curaje from usthat . When we see afigure arth an outstreched am in the wilight on alonely 2000 to the atmost destinetucts & find on approaching it, that it is a tree or a Sign board Money be that the maqueben

which it said to produce sail a Jana, dog produce a real image I might be an 'ulerarty wquit Whe they they power could not ytend Era forther thelp h Aflain. The Stignata of St Prenies or like marifestation - Docution to Sead you by post, aver interating book where may bave Escape you holice by a gentervau abour That Thebour of menden aun my Freuds (The Cake Dr Edw H Clarke of Bosten) on "Fralse Vision." or as he calles it halse Sight in which the Counders that visions maybe produced by estimulus initiated ulra manially

(See Part 11. p. 224) . The former of producing . + recalling (may it be gactually retining)an unpression Jordia may be highly wellivated Robert Hondin The Frenche Confurer Serva 'en her menous Prestidigitaleyr Confidences d'un Bustifilieur gross au clear taking this . in his 14th chapter Where he des uber his Son as reading Through a wall by what he cally a power of memory lemore" it doubles was a one sende > but it was, at he also calles it, a Second Segol - perhaps seeing fathe second time by the refor dete previouily sever, in the sait order. Thoritans in which this

f. 3r To and hair first received it. She perfect destendings with which . non existent objects. are seen or seen Tobeseen. The manner on colich all. This. Jeatures . which below To the fanaed dejet are allached to the , form which The decided Shertator. find was the only Elemal four dation for the curpeddion produced, Suggest the possibility that the power within may not one base for and, but. infact. groen physical Gloslence to, the in pression & I doud Know that we can Say. That the inage on the type from a real object is in itself

F. 3v more real than that of an object which has no material Existence Bat. I mastrobyleed toofar The liberty I have taken in writing you sur to the hope They you may atleasthe wherested in my friends > Tealise suito no Thanks forthe pleasure you have groenne Shove the you decheat servant honorlobe Geo. S., Hale Roan that we can day that's live age on the bage from

Serry S. Hall F. 5r A COLLE S GALTON PAPERS 5 Exiger Streef. Broton feats WA Jane 13. 1881 Thave full read your interesting article in the June number. of the " That and Review on the and am led to ash of Ju have love received .. a book ihr ihr Hent bypost. Logn (un Dalitas fun

Z. F. 5v manel) Fr. Dredes Alloche on halse tedeou lotte love That Joupoblesher de Millow. Metoch I an fore and not fail to ulcrent you of thes not reached You. Istale habby Tomahean author Effort to pubitin

f. 6 3 GALTON PAPERS you hands Thosed you do me the hand to reply this place addep as below. Since mahan may be closed duing sparty hehemmer "> & believe me with respect you obeduent servant The S. Hale 3 floart St hads Borton hads

W. E Harv St Mary's COLLEG Galway GALTON 2726100 heland January 19" 1880 Francis Galton, S.J. Sor, I have been much interested by the perusal of your article en "nature" on Visualiet numerals," and in seply to your appeal, I send you my own lase, Which bears a semarkable se. Semblance to m? 10 and 12 in that article. I do not know Whether any selations of nine have any similar experiences. I can visualise figures up

to about 150; beyond that They become indistinct and banish m absolute darkness, though I have a sort of consciousness of Their infinite continuance. They appear black in less intensely black space. From 1 to 13 They nie in a vertical line one above The other: from 13 to 19 They slant upwards away from me and to the sight: from 20 to 100 they again fise vertically. Below 10, 18, 20, 30, 4c., a honzontal black line appears, and at 100 is a kind of broad wooden platform, from the back of which The series is continued, like an up.

f. 81 right ladder, as before. In with. metical work (for which I never had any great fondness, Though with a slight turn for matter. matics) when a child the num. Erals became personified to me, and presented carious & analogie To what is described by your correspondent h? 10. 6 (feminine) 4 and 26 both masculine) were my favourites - 6 gentle and straight forward _ 5 also was a lively, cheerful fellow, sunch resembling a chers knight. 8 (masculine) was a goodnatured, helpless giant, While y and 9 were malignant beings, and 3 a treacherous sheak.

In mental arithmetic, which find troublesome, I follow the same processes as if working on paper, but the figures obliverate one another and have to be te. Called with difficulty. Visible objects and sounds are Easily recalled, but are not so briviel as The realities. Smells, Eastes and feelings I cannot recall to the magination. Justing that the above facts may be of use to you, I remain COLLEGE your's very truly GALTON William 2. Hart PAPERS

apr. 26.1880

GALTON

7272610

address Rev. A. b. Hill .

The College, Wlinchester.

Dear Sir If you care for any more information on the subject of your instresting study of "Visualised Numerals" etc., IShall be happy to try to get some answers to your questions from our School Nat. Hist. Society, to whom I hope to be able to give some account of your observations Soon . I shall be glad to have a list of suitable

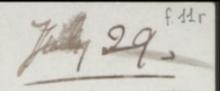
questions for boys of an average age

Jamyours Truly

A. S. Hull .

0 14 - 15.

Reo A. D. Hill with releisns from boys.



GALTON

The College, Ainchester.

216/10 Dear Sir I am afraid I have been a long time in Sending these papers on your "Visualising" questions. Perhaps I have hardly done it as fully as you may wish . I Explained the object, method, stc to several classes and Supplied them with questions, leaving it. quite to their own choice to do d' or not. many more promises li Send me anowers, Than actually did. So; and those who did not seemed to find the affort to think about the Subject hand . I's expect therefore

F. 11 V from my inquiries that they would have said very little . The set marked A are from a division of about 25 boys to a Certain extent chosen out of two the Classical divisions, as being the Sa best in Science. They are Sen fairly high up in the school - The 2nd below the VI the B from about 50 boys next-below the last = a Part. part-of the School where I Div 2 Sam magine less hard work is done being at the volton of What-Jun may be called the up per part of the School . (I fear the names of our Classes here would be

rather mintetligible to outsides) f. 12r C. comes from the boys next M below there, about 60 in two parallel classes . The part of the school in wh. your friend & mind Hills , is . I also send a few facts about the asociation of Vowel sounds with Colours from three brothers, cousins Juine: a young lady. a cousin of theirs; and one Athe Elder toys in the school. I shall be able to tell you anything you may wish to ask me about the papers, if you will mention the names of the writers. my address

during the holidays will be Stwmmon Vicaraje Lostwithel . Yam Sonny I did not by the Experiment of making the boys write their answers during school 283 hours, of course after sufficient too warning of what was to be done at the Same time I believe The papers I send you represent fairly E Those who could answer anything, as they certainly seemed interested in the Subject; The others who had no Such faculty Either attempting & failing, or not finding any response in their minds took to interest in Janyours huly The many A. S. A.

leat & A. Hill Winchester Three brothers - It, N, and G. Du Boulay, associate colours with certain letters not the same in Each case : They have not mentioned this peculianty to one another before . miss In. Hoyer finds This association of ideas very district in her mind as described in (Shin a contra of the Boulayi) value of the Hill G. Talbot (wincheoler loll) doeo the Same alou A COLLEGE PTO . GALTON CALTON PAPERS f. 13r

G. A. Talbot.

| | | connected with distinct. |
|---------------------------------|-------|-----------------------------|
| a. 2. 2. 4. 0 4. | = red | te finite colour k |

G. DuBoulay.

a: red E: 4ellow J.: black O: White U: blue Q: blue

a poppy Suggeoli The Sound " "

f. 13v

4

f. 14 - red +A +B I black W- freen + C - Yellow 3 - lightbrown 2 - Darkbrown X-red Y - Dark brown Z 7 - yellow S. yellow n. AuBoulart + J- red JR K + m - blue Sky = m +h - green grass = n opa * 8 - darkbrown GALTON PAPERS +S - White T U

f. 15r G. J. Tallot 1. Dim. 2. The power of presenter, the whole picture is work though it wish. It is same to fix on the individual objects deparetely. 3. 490. 4. When the Eyer are open, as in reality. When they are shut just before the eyer I cannot project as ungo on paper. 5. hot very. Dimmer. at the back, low down, but very shipity also in the Eyo. 6. hot much. 7. You. You. 8. hs. ho. q. I see humbers a dates as they are printed. The belly figure 4 is associated in my mind with red. This I believe to be from the finilarity of 4 to A. The onvelo I associate very strongly with colours then, : A red E white O black U green. 10. I see the figures as I should write them down n paper.

f. 15v 11. Ups. 12. Yes. 13. I know nothing about this. 9. J. Jello 9. J. Talbot. the

f. 16 anvoer WASHBURN OBSERVATORY UNIVERSITY OF WISCONSIN MADISON, WISCONSIN 1881. July 21 trancis Galton esqr / My Dear Sir/In Porking over some old papers yesterday I cauce acrops the two small sheets heremit, which were original memoranda mate within an hour or less of an occurrence of which a detailed account is given in the larger sheets. I had written art the latter to send to Mature when it accurred to me that I was probably giving too much importance to a small thing form my

own ignorance of what had Deen done in This line hefore - + there fore I delive to submit This account to you. If it is of any value to you will for please to ac-Cept it for your own note book & use it if it is of use. If not pray destroy it -I would prefer not to have it printed in Nature, as I at fist proposed. The inquires suggested to me by it seen very curions, + if I had

The requisite Knowledge & This I showed certainly prose cute them. Tray parton my troubling Jon with this if it is an old familiar story & lay it to my desire to place it where it can ke most useful if by change It have value. Vace my deartin Very aitfully Edward Littolden Direchor COLLEGA GALTON PAPERS

I. I remaindered That of 1. 18 had Thought before the operation that if I remembered any preceding thing it would those the mind to have at least two layers. Call the above [A] (At the come of 7 + 5th St going to the dentist I remen (kered [A] & wondered have to mones turn out a 2° tune as M has the Call the above B I. Under the 2 Speration I remembered BX Creekte abore(C) Monghit that I was remember B + that the mind had 5 layers Call the above D layers PAPERS

In short (Original) 1.19 I thought Lie. reflected that I was remembering thurking at the comer of 7+4-5. 3 that lefore the 1- operation (in 1875) That thought that if te I that the thing had turned { 5. ant as I ispected -+ I summed it up in my firt waking speech I am fing to write to the editor of Reid's Hameton hat the mind has 5 strata" Something about Hame han was in fint speech in 1878 I now remember

answered Septi E.20 (1 Washbum Observatory (PAPERS Madison, Wisconsin u.s.a. 1881 July 21 To the Editor of Nahue/ My Dear Sir/ I are not sure if the following recital of the effects of the inhalation of Vitrous Thyd has on my mental sperations has any scientific value. At least it seems to me interesting in more than one way. The facts are as follows, premising that I have mhales the gas but twice in my life; once in 1878 and once in 1881. On bork these occasions I was in the Jame place with the same persons around me performing the operation. In 1878 before the first operation I was naturally curious to see that how the effects of progress of losing external Consciousness would be made, + I Thought That if I shored remember any thing during the operation, it would show the mind to have successive strata Which could successively be put to sleep.

(2 When all were one of all mas so extinguished that works be death. During my unconscionsness to external Things my mind was apparently at work + I remembered something; the on awaking & before gaining complete control of my senses I said to the dentist, or rather to a prend who was with me " I shall certainly write to Sir William Hamilton; he moved like to know This ." m means I took no notes of the things remembered (in 1878) + the whole of the details has escaped my mind when I was told (in 1881) that I must go back to the same deutist I have another toost extracter. On my way to his office, I naturally recalled the former experience and I recollected that I had thought before the fish operation that if I remembered anything it would show the mus to have Anacepsive layers or strata. Call this recallection A. thought A, that is the changht that if I remembered etc.

At the corner of two streets My much was diverted from This thought for a few moments by something which was passing in the streets, but shortly returned to it, and at the corner of F + 5 th Streets I again remembered A & wondered if it moved him out so This time. That is , at a specific the place, I remembered the thought A. Call this pecollection at a given place, Arriving at the deutists I D. was subjected to the influence of the laughing gas & during the period of onter monscionsness I remember that at the corner of Frand 5th streets I had remembered the previous thought A & au Call this second reed-lection C. While still under the iffuence of the anesthetic the my Thinking was going on + I those thought, i.e. reflecter (I) that I may remembering (C) the previous recollection (B) the apressions of a previous thought (A) as I had at the

f. 23 (4 corner of F + 5th St. (C). I also Thought that the mind had 5 layers and on awaking I said, "The mind has five layers I shall the certainly tell the editor of Hamilton on Reid "After coming out from the office I was much puzzles for I awalyzer the processes as above + has only four processes A, B, C, D, whereas I had districtly Said, in words as the result of my expenses that the mus had five such layers. By an effort-I was enabed enables to recall What these five have been were to my mind and at Suring the operathen, as follows: I thought, ie reflected (1) that I was in the state of remembering (2) my thicking at the corner of 7 + 5th Streets (3) that Defore the first operation in 1878 I had thought that if I remembered etc, etc, (4) and that the it certainly

5 was so now , (5), ie the facts were so tso. I do not wish to be understood as giving either of the above analyses A,B,C,D, or 1,2,3,4,5, as to a correct account of the processes which actually work place. I simply wish to recount what passed in my mind at the true thow linclowcally or = not) I explained them phenomena to myself as they were passing + while I was in a state of miconscioness to external Things , Many other & I male Things happened which I will not speak of referring to only one . In In 1878 The deutish has started a musical box to playing as I then 1878 I felt a and remembered that it was said to be important to lose conscionsness under the influence of pleasant thoughts

and I had a feeling of \$ a kind of pitying indignation that he should thick my mind so poor as to need a wretched waltz-tune to give me pleasant & soft thoughts when my mus was constantly full of them. I had totally forgotten this in 1881 and, so Tar as I know, I did not See the musical box before losing un-Conscionness, but instantly Ite on heaving it begin its villy tune, I had first the Same kind of wonder & pits & second the memory that I has has This before, recalling also The exact pleasant memory which Thought of & compared with the deutal music. These are the facts as accurately as I can State them, & as I said, they seem to me interesting, & perhaps not without value. a series of experiments of the Kins, would cer-tainly lead to some important conclusions Very faithfully Jours Edward S. Holden

Shelter Island, n. Y. £ 25 July 14 - 1881. Wear Sir, Vour letter has followed me from Cambridge, and Share great pleasure in refeating Forgue ite experience which I communicated To our found mr. Conway. i a very annoying itigation, and was longing at the St James. whether on awaking or whither in the midst of a Joy not more musures, but reverse, as I lay in bear, I saw Surany a human reade within a few inches of my ayes which some closed. The hair was sin, the syrs the, the plant textime of the skin distintly visitle the spormore for courtiment, and the speciel tone of reprisment plain To smark & upricite. I had so frequently longed for

2 a kindren sperime that so f. 26 aniformy cosmold similar subjective Henomine to consistion of the constrain Fisculo more or less that I said instantly to myself - The is - Daw of congetting and I will remain perfectly at rest and struty it as ong as it little ho somer had this reflection famed through my mina & my whole frame settled into abovinto quito, that The main by an to a less distinct, To become inscipile a outine, and a less that a minite it has wholly faden away. Since This reperiores i 1869 I have had it repeated many Finis = 6.2. I have reflected seen figures , me as ditinto of complete at tim deserved & nickai with h the same Type - whether subjective.

3 I have the despond to courise F. 27 The Effect to the use of tobacco as I smake and sometimes accounty I dure Say -I am writing from The The have ofthe family of the storfure, which is full of ghost memories. Its listing runs but night 250 years the file Storin of a ghost, wohnt Date and though so were attended that he gave it putition. The lass in white, i that case, was seen by both the Ladies of the house of my lots facher laur mr. Sardiner. I die not Think the phenomenan, Subjective, on spically affients of retines adlanation . I will make it a pour to look up your about in the Rivier To which you after . I am faithfuiligun ? ?? 2nHorstords

4 auf 16. a reading agains your letter whi I have millain of could not find when I sat down to write in answer tord, I find one or Tur louts which had except me . In negarit to the infuence Springer - When relative my agenine you the american account of and Scines, one of The members To marked, (and he was in charge of the Innan - anglum near Boston) that he would escribe The halucinstein, as he denominated any aderimen, non to Congestion, but rather to the constrain of cullabore of cited cases in the asygum where hingen or farting had brought a visions. allusion was made I think to The phenomina of strange sights founds consequent upon protonged faiting, that have the recorded in the asperiment of devotes treduces: and also

to it cases mentioned for the i hi Anston of European Contiguion (that may not to the free title) buttered I should think about - Funity year ago by Staper gives account of views of ford to staring min - and much hide, of kinder character. In negard to congestion, To my which the law it. Efter (opto de dans lesgum) Fork acception, I may of course to wrong, but I have no idea of ceretral activity what is not complete with tension - with greater or is sugarguments of versits. This is I no momente toutres, here. If you care arreadly to form Vo, I can copy out for you, in my riturn to Cambridge my note fits care of the Ker, Dr. Stown (hushand) ma: Anno Buch Store, . His care

Horsford F. 30 6 is " many respects the most semakake I have known . The make only saw, but heard. I do not return norm for Forme three months and the will fuch it hyme your service I fear I am Jeiaguag yum, En Horsfood GALTON PAPERS

Show and May 3/00 M. H. Vanderbilt University, Nashville, Tennessee, M. J. A. April 20, 1880. Mr. Francis Galton: Dear Sir : My allenhin has just been directed to your communication in Nature (March 25), and I make haste to que you my experience. Indered you will find a digram of my hundred. A gentle came from one to 12, Then a new departure to 20 (the Teens should he lenger Than marked, - about = 1-12.) Then at every decade a new departure, approximately as in diagram. 40-50 should incline dight reprocend from twingental line. I see it from The point O near I, and from an elevation which would be about in in my diagram. 50-60 aught to sum direct from O. When I reach 100, instead of set keeping on of and re peating the diagram, my mind ames mus to the right back to 1. Hence, in making

f. 31 v

metal calculations I must like to make midakes in passing from 20-100 To 100-112, or metter, from 90-100 to 1-12. I am always in sanger of dropping out or adding lov to large rumbers. I remember The amit and The lew of dates much better Them the untry miles fin dater I ment lam The culturies, and then I heat Them many as thing or units. To remember a date perfeel or exactly, requires two district impresnims: 1) The locality of The century healed as a unit; + 2) the locality of the mit proper, which, of come, locates its decade. I see no district objects, and carmots make it clear how the whole thing looks to me. It is entirely in "dream land", and I have no conception of its size. But when I am making mathematical calculations, I see the figures more or less distincty. I Can remember that I leaved the multiplication lable by This figure - It was very easy to me : I learned it in one day, and windered why it went beyond 10 ×10 (It wents to 12×12).

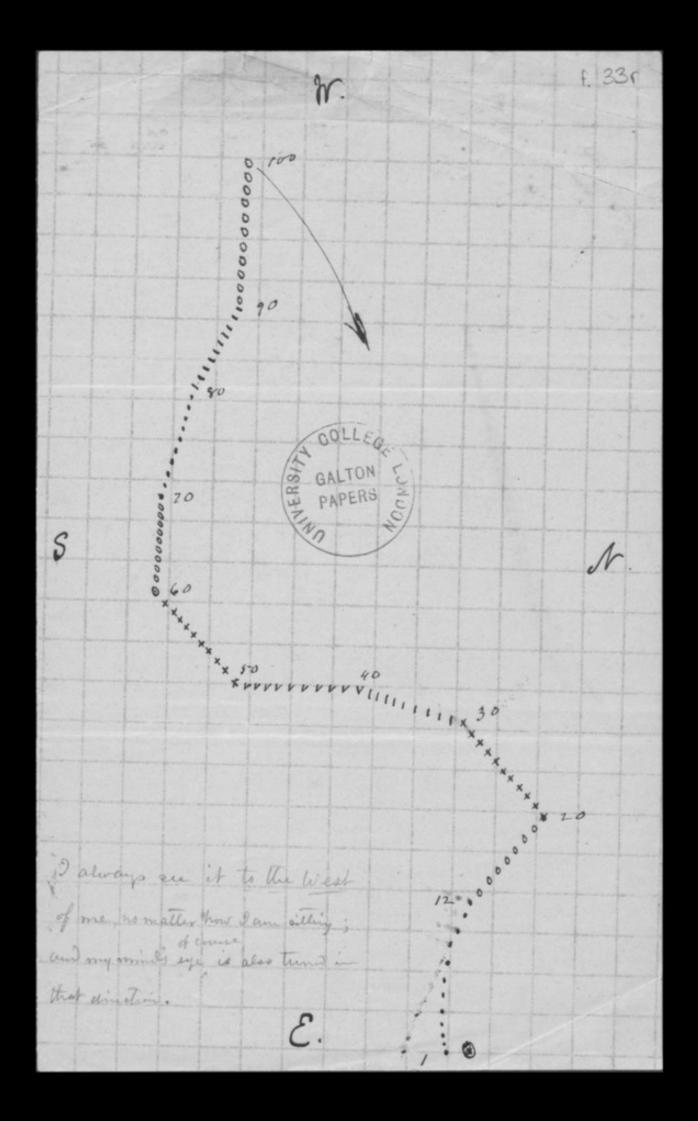
f. 32r

12×9 to me was 10×9+2×9, vc. I shall a few more facts that may be of interest. I formed images (when I was a child) of everything I learned by heart withach understanding . of come I mean anip learned by the eur before I could read. The images have no meaning to me now, and even then they only were representatives of sounds. Now they do not suggest the armed to me any more, and although I can see the mage, I cannot, except in rare instances, recall the words. In a artain orny, I see at one print a maxil . On reading the courds some years ago, I formed these words: " I'm the eldest of them all"! In This case I evident pictures a real object; but the eldest is not refrecculed by anything now militigible. The moon is represented in The same ring in its proper place and shape. I am X years old. My very early education was neglected mulit my self acquired attainments in arithmetic attracted attention. My progress chim was very rapid, and in few months I completed with -



melic, in one month Algebra. Other dudies at This pint checked me ownewhat in mathematics; but when I was 15, I have finished the Integral Calculus and studied Spherical astrony, (without the use of motion with). Circumstances, housever, led me into classical pussils, and mice I completed my college come I have made them my specially, and are now professor of mack Mathematics still have a charme for me your very huly: M. W. Humphreys. P.S. Thave reason to believe that my image is a draw-back to me : i.e., it is a bad one. I never had any bouble in any branch of mather, and actually auticipated many important principles. In sercifice Secontry I always solved problems before reading them

over, And yet my arithmetical computations are little reliable, and I am always impatient when making them. This leads to dangernes about cuts.





Ward of Wellentage 27 the Colony James Key The reading your letter in Mature In Jehna 5th ? was immediately strack with The pleution interest The Subject. The fuelining meanin" has appeared in a numbe which has accidentally failed & reach me and I hastened to write home for it, stating that I believed it contains & concern myself particulary. Whether this is both addent and a concern myself particularly. Whether this is - the circumstance I wa glad to meet with you justite Communication in Mature for march 25th MA get having ela a specimen diapar I am as doubt at a disasrantage, but I This a on the which that I may joi Those I your acquain hance who ausure No, and ask what coffee institles & understand Visualizes numerals. It's Atennie howeve with ward to the last sectore of your lette (h 495) is which you ian'te information a collen according with letters. " The since childhord' These have seen distinct and unchanging in my conscious ness, Some Tuise, although very selder, I have out timed Then Atte amagement of my teachers on the score of my courade, On Jella student at the Phinies ity now deceased, conferred at the This when Maychalog was an adjust of study that he Could perhaps duties the letter The an associated with the three. the projetsment but this way said deritetings. has berlesson' mit my whence to happy but arhether the labour of the Sugelpoise mitamic were too heavy a The Colin of Lorned way Too nonsurviced a place I commit an with a de hetween u but asthip nere land

To proceed however with the facts . A is brown I say it must degreed in the and withing will are have the effect, I an onnices, of making a address other will as a matter of carries is I value This colour of the vorsel, because in the instances then see conscivable explanations of the association . I this inclance I can imagine more. I semante aggestig & Professor Bayer the how painted parely in the zoom is which I feeloop heart on replaced it while it is catai that I lant it need in it is much as i any The som I do twetty elane her repeating my a, B, C in suite a different room which was painted of a waifour light give . If pietous tooks and Munich letters are We ared : of instruction I an casar That homeness day as non the to all of the will XYZ. shady of how ecconform, to my airs, The muster degrees of openness in prononcing A; from the lighters I rellacest of hours to the deepert malogain. This fiel i loogh to from that it is with the table I all the courd of A that the association of becauver exists; sive the Some Aw i much seen Abjectly and to then to the A of man. This a researthy in the fishing need or with addited y apars the E of bed mue the ANV. get as I shall freekly explain o AE are stocked it is color for A in all its cauge. as this point I fiel a trend inquisition & has whether anothe Jura who know Visuelized Voredo and puchance thick a feels A also a brown, due, not guess which courts courted & light & which to dank krown. In my an part I call frame, grace, maiden, work with a light yellow- a dial - box; while Walter, Harthome have rich dark shades. When I proceed to the colour of the conscience I shall mathin how their Elmen Alter is the alberto The jus deposition gives a tenfe to the mode, but is a dear distance where, the second of a have the above coloney both whe personned above and in syllables, and betermediate sounds accortiges : For instance Ran, rat; farm charmer; have a sienen & an unter state uspectively. I do not day that i dipathen, and don't le vorsels to the the falue and other not rearding to the spelling the the Some, but that that independents of spelling lay I shout I the carieties of A and give defluce marter shades of colon. To make meaning plain, I may say that i to to mind plack, jet Hack This I descure i having gives the abound result of while being black althe not black white, and say they a critic would notice that The type I ~ 1 contains as chace like other curved wowels a Three - which which pope & Hack it might is very astrally con videred Hack of Three accustion to Hack his Lip it. . Be this as I may I wa about to explai that a I gotton a a an i "plain" sailing " celong in acading a thinking of the English works an spelles & first of the brown of the 2 with a Pille she day and was; and The conceptant, well with when I mokes alme a to the association of Ellen being with letter new the will some , But I have articed when non familian with Settlish diales the new, that words work distant finishable by deflacues of armad any differences of alon with Then. I Seattich pronuncietion are may cliquet the spelling

In wo Scotch has been apelled for many a long year. F. 2.4 Man Scothick people who happen to be unable to speak in the Eight Jestin write The undy the stelling is receivering Eights - the i now as Southich literature. Imagine them a group of Jishermen talking of the sail of their brat. They might use Sail also as a verb; the same word to the car, and shalla, recould he the seal; or again a seal, a sigillum; and of course it might mean an auction, and perhaps other things. If I wave a listene I then I could undertake to deket a diffuences in the pronunciation of each word accur to the meaning. Here a I say spelling is so for at of the question - In the suppid spelling would at was by association drag - The Sight promuciation of same with EE - that I could this k of the A son alove & thick of it as rang't i depth of how Arow all of one shall if I may use the expression, bet vary - flatness, lightness and so on, but never bordery on the reddish a purplish hours of the A Somes Ly war, ware (aswed), & worse, all finne all'he in Setter, (then are purplish), and - hit I have ahead give example, and I do not provise & dis kyning The waters for cash the either & colour a sone, and The while Subject of Schel was any introduced in note to pam a experiment about respecting the origin of These Colon associations. I greats doubt whether a one rigin will be discovered; for O I repair a, 1 white. It feels like a conferring to say 20, 20 laig I reading will the remark arise - That is because of the circle - the rome evelosed field of white

paper - O look, white . Well, that is we way y account In 24. But does 22 look the? I condants occan the to (bits it is a suit of althousains, with sain shale and it is here I say that I have me , and I to not make matters when I say that I have you aus I to not make matters in the " a the mature of the Source of this association. The other nowel, E, is more of a Jazzlen. Never have I been dectilitie in all of Carting 4 is stones, of a conviction that e is a clear cold light gray the. I unente douting, when quite a little chill, the picture I a jocky a horseback with water colows purchased at The rate of tix cakes to a penny. The shirt of the juster received a large share of E, as I said to myself while daubing. The letter which may be explained on the Darm havin as 22 is on. "It is a consonant, but her always to by min secured to glittle A five a light getlowness & the edge of the under it ornaments. Sold, silt, glean and all the host of such words, may have nificade This - On everon effect which I don't this that I an asporthe In is the mighty of This gellas all the light the of EE in Green this giving a veritable preamer, to green. Lake another consonant - green - R. This has awariants appeared to me - as it is a haw mut to crack - of a copper colour. "Red of course begins with r but a swarthy blackney seems to inservence is that is not The least of a critic so a scalet color ; and I say inder vene advisedy, since the color of x is to me thiswally The the trilles promicichin of & (universal - Scotland) an interrepter a toother - whell anaugement. It is re markath that there are other letter which have a degree of vecublance to I, and there and the double conservants

j. X. and Ze. I can prononce all the other consumants without her darith of a sovel a wonalized effat, bet they have lack a selver about the J : Hack tippe with a rich deep wi; X is light & hassey; To is addist getter, with pertipe a truck of declars a conficction which al. In second to have if not a colour a country senter estaded to it with an author a bounded figure both a fine ensurement as if celow for finge, teather, foliago. With flatter, fierce, or fait it he with the do. It will be a attractive speculation to this & that - the nineliging perces, much calls the decast of colon & consome to that of form. But I cannot say that consuments have a fire need in the way of sheeting - as in the way of edging Some have a leader, some an iron, some a wittle ring about them - I seen the Que it, although any language is compred. The hydring I and of the works while they holin sea roundes a square a lister of accusing to the (the consument) nation The semismed 5 indefidure of it shaf, areas straight a later file, soretty like a datte nen y ingolar Mora dester. Ok seens to più a word down as if a feir + and The a stat when made at the Wh always her the die of aspectality as orlan's that a was with a fast het night when among roughs. The freek, of characte indee on the fact of consuments are as less wonderful them this. I coloning in It part of much; as that very intruch issues arise in the ready of any Jassap and sically, and nors pain ters an a fate to a proces which It's polary dis and rection in the privarity. I contine my cell however to the califiel of color, I could if calles when to describe the connect saintin or to depict at letter with a had I colour, she d'flucance, is the general neutral this by consone & fecalian to carl; and The Lawn hold good in the care of figures. When I see that In instance I that git a brown . 2 a The la secure the color of E. of secon and a gree a say district erton confact with that of other duller numbers, and a worm estone, but a doubte for the of sed and file a something of that was for the that can find, then lotte. Vit however i geller we the is ware set while to incosted set. It would appear that the number the wints of Healf a taip and, atty cathe James & I but inderfore with by the cold white o di , althe I is not they mind be black is i . In the and allo' company and heride consents ; to short " often the reduces of the necessar & Star is 200, as a althe sent six wor, which Site vigite sit, Johns the spelling is it illuminities of I any cell it as. Dollig of freip to profe, I have noticed since I because convariant with Datet that the ig or of is of a deep warm grey, not at all thack, hits The the Such H, while y cover i provor mucht siller a althe examples a be lists I call junish int do wit the I fin & continue a porce of interspection to long as The mid my ship hearing sake to a statement with themen, althe every howert with the ist, the Shitigoft and letter a figure as it plastice but hefer a left againing the Shat have not visalige for finen of handetin. I huas lastly that I noted in althe alle Bayers That I pursaily an arguinal whether conflicted a sigle, the various ideas instrue see to do a chip but colour & position before me - a and so the the a husbane as this has been The mental relations :

witte daring the heathing - Tunes of a the day I have the less shaws - apoly give in my handwritig for will find by name in A Abesial Directory as 2 m June they mina having Salting D. R.S. GALTON PAPERS 42 Musland Sato { andr)

7. Salta Mintagen Cape of Sond Some F.R.S. July 24 1820 Dear in I saveray that you have received my shatch of elley her wantiged numerely. She is beine & asking as your suggestin would have it. Jours of here 23 reaches are some days is & self to lefty & defit a alphabet and arsure you putching on the when conflicteven I can, and to state any such which see to me to given by associations. If will the non please me to do This, as Dwill : therefore fel more free to ships the astorne of ileas to the singlefice to ation of cubai Theme of medaphysics & the subusin of Them - a application which I have a quet derive & accorplish, whethere deput a carchine to the my accarles in private news. in spart for the theory of carcan ver, Then an question which to style of withing - the case style - the classified style - as as a which I then and he due idented of minal gation. al so with althe I suched the minh. This mong inder the east the may other departments. hast - helping my letents vaiting the while - I have I tell the with reject that I have been travelling right as day since your letter arrived, as that at present the replachet cannot be attacked. sugt week also work i cet at In me, but I shell by to illuminde 2 word a two and sa the sheet it you aldren P.a. Swansen, which ala lags. I may meeting that in driving back wain, weather and after sunset, the king of the along letters the while, I could not be Sack for many of the a black body with name bode - advert this for the starter on the H.M.M.

Min ague James Keg (F. 6r (marter hallow 2- W to salade loder Capey for Some October 28 to 1880 A COLL GALTON F. Galtan Sz; i galtan Sate, BAPERS Loudon : Cear fri Aave jun letter of June 23 before me. I was quite make to ausure it in Time for exhibiting a coloned page, but have never forsotte you request. The illustrated paper were 20 Jull of Induser al are There that I could not but remember it, and helieve me, I any finished an using in another English last night - an essay that has been spearting about my deck for a year - and having Thus cleared The way, befor to your matter this morning. I have seen no perh Jape of yours, but will jot dawn Tay, That seen & me in any order reserving a new Thing to the last.

1. Shape. I was sometimes take. aback of the maune i which you wident expected me & fill in the colones; El te no daill being meant In an arthing to be filles with brown of various shadles, and so on; or perhaps the a uniform colon asthat anothing was expected . Well I eais & myself, if the falton's the conceptendents have deficted The letters - This way it seems a very naturel and a very suisitle plan. bet I gueshin whether my letter, do not derive their colon Jean a halo, a backgrown, in something of that and rather. after much egitation and experimenting I decided 1) that reading, The shafe of the type to can disturber and the colour is suffected as something distinct set acconhanging (like the sound e.g.) 2) That - This king of some printed mette with open eyes

the effect in The Dame, andy F.T. faite, and with a surrounding void of black gradually Jacking es the Inder of the illumicate ofal y thought i approached . 3) That i This king all eyes about The letters seen summer with a laze of the attropiete erhour. 2. This into duces the Julshin of backgrow. I reading it i the white of the page. In thing it is black . I may state however that - The ing of the letter, the consonant are more les j seen a shake then the nowers. The former a I have told you may all he describes as a cold grey the, and any difference, he to depict an a separate Juge; and this grey colour > appenents all That stand

for them, shapen on the F.TV dark backgrow; while the sowel are separated for it, i black, by a halo . 3. Oistance. You question Where is they appear ? is another their f which took we aback . altho 9 Was educated in my day as an ocalist I failed to observe that patient Complained when of month's appearances being in the hear in the geballe. Scanding I have set myself to discover what sensations of ertin alla nearest and what The nur remote. The nearest are the plaster, sometime, coloure, Caused & pressure a The exchance with the figer. These seems 2) close to the side of the head or just in frent of the Se; The come 3) There visions which I reserve fa mention as a new subject. 4) Then The or al about the secone distance the well know phenomena

spoke of a spectra; and furthe 5) removed still the field on which with se, shut type, as throws a feveral are represented when & This of Them . We This seems at no peat des lance - but i) 2) as 4) heiz common to all, I This this may serve as a soll of answer to your guery. Menys in agined do way a tildle I think - distance, according to The de-Have at that they are accustome to be see - e.g. the work, of a watch units appear ularen than a landicape, but - point of last there - little shaffaline in distance ELONDtehver and this a between the and a imagine fiel of I've printed matter, compared in the "HISHEN what exists with you afer. 4. The eve to colon. I am apaid I caunt hope to five even an ap maximites withful answer. I do not huns whether I have such in not. Siece hearing of to invention

I have the usher to test f. 8v rupel and the instrument for Jueging resple' mensie of erlow but This is hardly which you mean, In art and nature I my my forme much more reading. Than colour. 5. harshareney. The colours alver have a gloss. But a already menhaned, since is reading They caunt be said to wish all all, any more the The counds of The letters (alle to my min quite as much a part I her I, and been with shut yes it is only B comfelling Them, as Il where, that they assume any tis tachen, it would be ad flere to represent then in Tone any more than as in and live . Howeve The letters I always do regard as Colona, and whereve the colons Ceras from the are on the whole more distinct than These I can call of when O this h of is. Coloures object.

6. You may have which from my F.9r Juser manner of expersing myself That I contras it my formen state man to Jan as to colours heing associated with sounds and letter, I now This & that while Seatan I an think of y A - the abrack and well try to color it for you auning to 15 waring insmations It is more the letter the Thei sounds that call of the colour, -My Cese. Mrof: BY, BUY, and Vater BAAI be provouces alike at 9 colon them all deffacting. 7. now as & freige alphatet. I have alied total In the Juck, Catel, and I may add Devel, Latin te have all their Colours - more a les The same as in the Roma alphabet will hybit unds. The last named - Lati he always appeared to we an Beaut of the muste of u's m's and n's in the language & have

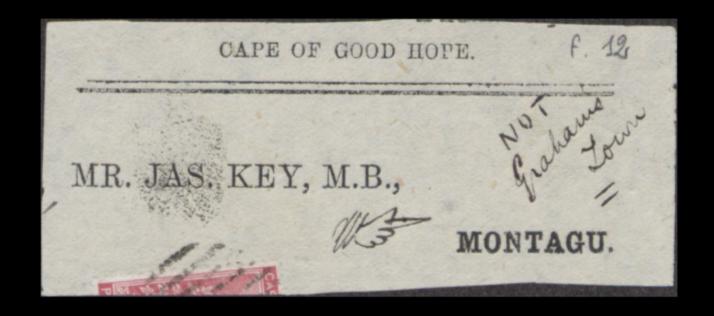
a colid sphearance the masonry but with y add this I in the way of colour to The usual live I such constants & vouclo. now take german which I very -perfects When , so long a. I that the concerpanding come - the pronunciching of the letter, They become appropriated coloured. I I were told That à whe fundances like are of our A's I should five it we estive; if the cutter, another. and where I do not know the financiation I lear I gues it, and all'x a secures of Mars & the line of the alt under haste - Bole - Hellers ? refais T as brown the : a gry and Is an; & a rich brown for instance. O course a line of healic I could make withing of - purch of und have a stylet houses of being known & Arthic. But a nere carions this I nust i for In J, and Thet is That the

yster of starograff which I and most familian with and practice Ju many years remainer to a munds Se equally coloulers. 3 1 dech or V - Vx This pahaps happens because The work are an itted . I insert then : 2 1, 2 . 2 . 2 . 2 . 2 . the effect is The same. I 20 select we and and cay "[2] what is That ?" and I answe " Cours _ namef 1 d 1 0 0 w un The I have down calles in here me and its esten with 21, such and has. The gain an Carrent alphatet. You may wish to have how it is come . . I am antilles to say arthurt reserve that hardwithig is column the priter metter, excepting This one That when handwork i illefitte it must take The Carguence.

8 In case that you should apply This elmark & my non Jagen I must haster & un lud. Without heing to meda-April 9 mil me tin som subject which have a direct lannexia with visualization, and Jugive we of this - the second Thise I recarins for of Them . Mushation in its figurative sense. a medical with speak, of a calling at the end of The cuspicatory sorred when you auscultate as being like a showe of spartes it which a ricket simetime bursts. gestures. I manhavit here tel in marke herceases not only letters but work, and Thought became estone and that then colonied raythe can be hand is about x y z - algebra. 1th

I the Dame way cardans naking F. 111 see weapathe of 4 been inf cenda idea, a that a accorpany ing gesture, and it is fair That chargers who caunt couverse Can understas each the thing festure. A would be a soleun warning the ad if In could catel a preque who ninelys - who colours his festulos, and Set las to dant then all - In Un, say some a photopopt of. hin sel Music. Is my great delight I learn that a took has hele Justisher (This refer to form rignalization) on a subject which her ofter shuch me - namef the construction of diagrams, COLL witt a contribur line, y m ALTON APERS and them whether the book double such curves and angles, and two at symmetrial & archiactual Why Buts a not

The whole abject of sulmony. F. 111 The It Lawer majazine has attersted to she That dogs Thick i terms of swell, as me This i term of right. But This is my collectural. I have left myself little time to lycente the nevel infortal this the estaces example, . In to the new subject I shall reserve it till, next week n schlaeve I have This, and only kay that I wish to call 't the Kalidocopie faculty and looke that if partie to pr, you will to so Son as to funt ine - The way 1 Justes fraction. @ remain dear Sr. Jun ofthe seral Samer Ky M.A. P.S. In the above, reading much be understow as sileft wasing ; but the addition of weat gatin wo not interfere with visualization . and in hearing opered colours as also charles, properly with a reduction owner a less courcing to fried. 2 hearing an unklumm language the much been or orig froming that Their astan to fried. 2 hearing an unklumm language the much been or orig froming that Their astan



F. 13 Haven Salton F.R.S. H 2 Nathand Sate (Store) De London, England

HAYDN AND TONE-COLOUR.

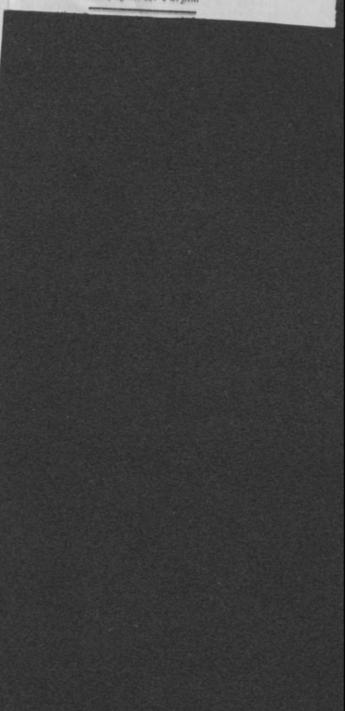
<text> THE father of the modern orchestra, Haydn, who advanced so far a field in the great picturesque departments of form and orchestration, bestowed much attention evidently to the consideration of colour effects. Schemes of compari-

GALTON PAPERS

notes continue to ascend to the highest point of brightness, the different instruments typical of orange, scarlet, and purple units in the increasing splendour; and the glorious orb at length appears, refulgent with brightness."—*From a paper on Tone-Colour, by E. H. Turpin.*

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DISTRICT NOTES.

EDINBURGH.—The Waverley Market was occupied the first week of the year by M. Riviere's London band, and although the performance on the concluding night was brought to an abrupt and unsatisfactory termination, the of his promise, without giving offence. Being commanded to compose a motet for the Chapel Royal, he chose part of the 119th Psalm, beginning, "Oh, think of thy servant as concerning thy word," which he set in so supplicating and exquisite a manner, that it was universally admired, particularly by the king, who was not only charmed with the music, but felt the force of the words so effectually, that he soon after granted his petition, by conferring on bim the momised appointment. F. 14V

that he soon after granted his petition, by conferring on INST'S "FAUN SYMPHONY."—What shall we say of musicians appreciate it at all sorts of values, ranging all he way from 'a stapendous work of the most excited promotes a start of the book of history, and see how grant of the way from 'a stapendous work of the most excited promotes were misunderstood in their own day, and the management of 'uter book." Of course, it is easy to finger back and the leaves of the book of history, and see how grant of the works go beyond the comprehension of our time. In face of such a distracting composition as the Faust of musical insight) one said that Beethoven wrote 'most style where (who certainly could lay claim to a fair share of musical insight) one said that Beethoven wrote 'most style where (who certainly could lay claim to a fair share of unside insight) one said that Beethoven wrote 'most style one is still a little timil of calling the List and the eares of the same comfort to remember how the faust of unside last abetter surety is needed than List spreak and he owned that a better surety is needed than List spreak most is to be a great. If a misunderstood work. 'Still it must prototation to induce one to expend moth time and mental hist impresses one as so fideous, strained, repulsive, and hove all, so unmusical as this symphony. Heaven knowing that there is enough that is usy and how is in Magner in throng the sould have one having my ears and in a struck by a lion's pay. I cannot see through the hideousness of the music, and catch agimpse of greatness hideousness of the music, and catch agimpse of greatness hideousness of the music, and catch agimpse of greatness hideousness of the music, and catch agimpse of greatness hideousness of the music, and catch agimpse of greatness hideousness of the music, and catch agimpse of greatness hideousness of the music, and catch agimpse of greatness hideousness of the music, and catch agimpse of greatness hideousness of the music, and catch agimpse of greatness hideousness o

OBITUARY FOR 1880.

AMONGET the many representatives which the art of music has lost during the past year, the following are a tew of the best known names:-Sir John Goss, church composer; Mr. James Coward, organist of the Crystal Palace for a number of years; the Rev. John Curwen, promoter of the Tonic Sol-fa system; Mdma. Oury, planist; Mr. Charles Coote, composer of dance music; W. T. Wrighton, composer of songs; Mr. James Pearman, organist, conductor of the Dundee Choral Union; Mr. Alex. Laurie, the blind organist, Edinburgh; Ole Ball, the unrivalled Norwegian violitist; Julius Andre, composer of organ pieces; M. Henri Reber, operatic composer; Edward Wolf, composer and planist; Jacques Offenbach, composer of French Opera.

idge, Edinburgh, by BELL & BAIN, 41 Mitchell St., Glasgow.

AIR-LINES OR AERONAUTIC BRIDGES. To the Editor of The English Mechanic. The Fortnightly Review for Sanuary contains an article on aerial Navigation by Dr William Pole who considers dirigibility "the great desideration in acronautics. I do not know whether I am alone in my ofimion , but I have always thought that "the nations' airy naries will initate the locomotive rather then the seen - steam er. Mans of alcering the latter are only a necessary evil. The stage-coach had dirigibility, bur the railway can 22 is better without it. and not only would much be san it to Alloras in weight, to balloonists in inventing machine 1, our to passengers in uncertainty of soute, but the daugers percliar to serial tecomotion, so plainty stated in Or Polo, would be obviated by substituting "air-lines" for steering gear. airlines I conceive as bullow - supported wires, suo pended over sea and land with anchorage as prequent as requisite. Whether they night to be single a double, close to the Earth or the belling in inmense curves above it I will not reature to prophecy; but the travelling are I should expect to say goodbys to stationary angues and propel itself either by a driving - wheel working on the wire or by a seren - fan as explamed in Br Poles article. Thus it would have below the wire a seil above it according to The conclusion found necessary. Beauter machines for segular Traffic, I can imagine a captive ballon. paying out a belloon supported line like a spiker's Thread before the ind being more useful to rilitary and muitica sumanders in cotablishing communication over the bead of an enemy or a lie shore Than any yet devised. Cape of good Hope, 22 21881. MEDICUS Frue name & adartes : Sames they, M. R. · olony. C. m. Montaga, Cape

M.B. 3

James Key Montage South africa Serve 1 1881 although the nature of an P. O. anarysuchts do with allow me Tatis I myself that you have received the packet which I addressed A Jon, rejistered, before the used of last gean, I am any ion Afric Im Some idea of what I call the fallidoschie Sense, I that The surre because diepaus a colores illustrations are al present quite at of the Jueshine. I was driving them, an weing, either in seen or rain, I griged which, I had not my attention particular flix-It as the rate of the untella. However then affined Time me a whikigh handling pattern, atter dunwards, for all the would like a tree fer a a sate tree. It was whiteh a a Sexish, a per a a darker grow. I immediated turne any they to be look & which the two lines foring the augle, I then append he we i vierte colours and two countryet his let an infinite sign gap, I not an af but more sits ago Joning an amazing cofficates & beart for pattern. her such spherown I an most said called of, a seen of them elves, when the hai is nervorked. At a move however I think I cale trust to on appening, althe I call and herbers, its appearence. I would shad my ges; on of the dias last deen und ching to me - I call not he is which - a part " it will reach der tick - the proces will be rethe hider That Their 2 by Cancinner y being on the hunt it wants multips & group the jugeon deigne, with Juste 2 Mach & fold & peer and all how the colour, in gitter widows, & stan, & withme, & plain, & indersections, - a ? sy a gorgeous display. I unle at have the distetres of a speaking; it is ma thight of the perceived; hat if it was possible to faint whill surgh, the chick this Carls he just down i detaid . I have no dathe that The phennen sin for our stray subjective sensation, not precised alunt, 5 itself, I the grape, I with grouped

to now an develo an the , with after a while , the Shartan is plaged at I disappears, a author stake is place. Has the power a fixed which from - The first blace is what I would name The belieden Ichi Jacult. I need not observe that there therease are spontaneous, and that articulary recall y then , dat a effect at the best . The duplicates of the colour cause I sat & m have become very Jades, Lot I have a dast the paquet of wall before remain destinct. They an a faith & (exponent of any experience & if I have colones stil.) Call defin translade a his again for your assures ment. not now subscribig to the nature I 20mels: Sig water die the lack die how the line hope you will have at spian and a copy of any went article of yours - niguelizat and rene Jour de Sames Keip F. Jall by FRS }



Montaga Cafe bolony 12 GALTON June 30 th 1881 PAPER Clar fr I have to Thank you for This month's neur the of the Inhightly. I think that the letter which I posted to you an The A the while bringing nothing Severically new under your notice will suggest a mod jeakin of the words " unaccountably " (F.R./1729) in "solitary" + 736 if you hencefulth include my case amony your numerous nicon-seers. not that the altimate reason for the accoriation of ideas; the changeful succession of visions (h 733) so minds and I would

Lay maturally, described & your 180 reverend files; a The development I one thing out of another coler in my our case can be perfectly traces in a much as the prees of ill l'he are inscursette. But, speaking In myself, I had hope, if I had time, to obles that each figures as applean before me in the circumstance and with the properties of those ? find referred to by Journey, could be produces simply 5 the mult plication Ja sinfler form. Superforthm, rotation, and various the thing, being panted. Nothing in all my The wer acured & my Malidoschie spectral mian which could be names the Mr Henstow's talips, wich, the examples referred to - my letter to Jo of Lune 4 the Aus I am sorry that I thus hegan at the wrong

lad as it were; for my carlier 1.191 and all other visions could be equalled I the hilliance a intuicacy of as vall hafe a staced glass winder which Thave we seen. I intend however seeing you colones dia frams & earthe you to Judge whether my key to The appearances be appropriate. The field in which these exist is, as stated - in letter of lack year, d'fluente for that of nuncae wildantes (20 much suggested 5 the sparter a Hacking h 734 F.R.) Mile Touching a this auter, let me short state that nothing - the unlo call he Justher from my experience that visions a illusions. Your allusion to stars however (1. 739) bing, to my recollection a cost of Mallese Crou see - the sky while sun lay in the Queel, Vack Elin hug one un te day. I law it tuice

during my walk round the hill F. 19v and theybe that I recognised in it projections of the retwork of vessels so easily descended on - CER X a light whitevached wall for example being also the Starting point as I impire of many effects produces (the "kalido ! vertice facults Proceeding hackwards Through Jour essay allow no to five you an instance 7 " the effect of solitariner" (h 739) altho af consisting of a dream a healthy person. Couring one vacation Sapplies myrel diligenty to prels and the more laborious of because my power of concentration has always been Sittere. I had always triver alone so far as companions of my one ye whe cureened and now my

maiden auch fin deaths and the eauserform herelf the only the GALTON LON PAPERS Jerson in a large house in which I denpier retired rooms. Buring my reading for the day the accurrence 1 a Crow I think in a passage of Homer, and the fift of a rabbit in the hands of some children at a neightoning door in the evening when my only accinal associations I you understand the unconth phrase. I had us conversation with my aunto before morning whe I met her at breakfast Two flats below. The recounted me a dream - which, In astrustical, she talker y having met with a Crow strutting about which gradually but each changed into a reblirk. a still une remarket f dean I hers and long after, and

in that the sightest prompting of mine, reproduced what I had red the day before . Inget the Julject, but I reacher how my hai stord on and when I heard her relate, as a thing some one had Told her is a deam, the very word, 1 a character - Sophocle, - in Something of the sort - at of the way words too. I do not consider A extraordina That Sell a conviction at the moment that my aunt way to say what she did; because although? an not at all sure the twas 20 the very first word may have suffected to me the etay that was corning. Soit happened however. You may ask whether I had deames of Crown, rabli's, and as furth. no. Caund hay muly to concer alto When the with you ly bland him y castles in the air. And Jo-

will take this - food part when ?"? say that I have for years, way, all my I've been accustomed to trace (fling - the cloud & a inerict the palse. When other have pointed out potespie outlines in work schuer a othe surround yo I have bee donte to fich them ap " but as to clouds, I have certois of thought, we made a mens. which is have & me, of filling a few aketch books with the vich Indierous fine, which the clouds suggest. That this - my Jamite field may prechaps he explain ed & a stight deque of topsightedness which I an alled to possess, altho! got afficient t demand leuses . but as to the puces by which they are essestibles (h737) Caunthelieve that I have any favorite course of muscular motion for The ge i no one would be more "las to fillow " than two then The Jime which starts into heing does

not defend on a derion curve, but appears after a complete scruting of The whole scene. That you the Three elements the sperate caunt be painsais. Iwas les to make the remains to Cause my pictures inter the whole clow, a had a fait of it, so that no other Conce for selection in the and for Sheet that a ode tofot a pichon frat all ant of an inefalar clouding Some parts must be exagerater and others take small notice of, ? answer That * Do far a find ca judge "Junef acide sel" would be as good a a tempted & discais for they what "will suit " because I cannot remember ever changing a inege. If I do where anything I see a cloud sings, and I save anything there it is for me to took at without effort no doubt a altertion about it , except that Is detail, become nove filles up and always consistenty.

On p. 736 you speak of partial anon hype-aesthesia. now I have GALTON TO long sought for an account of night mare, without success. What is it ? How does a sufferer feel? In my an person however I have been actonished to find - some years ago - a repitetion of a affrestion which troubled me when under ten glang of and werworke) at school. Jou words partial te recalles it to me. It is a seuration, while anothe, I mingled immensity and smallnen; extreme territy with extreme bulk. These qualities seen to affect the beddottes with which the layers are - carlact, the teeth & lips where the torpar the touches. I to permeate the whole body. It would not do & tell you that - This and this of albered nervous auceptibility the universe seems made up of licings and

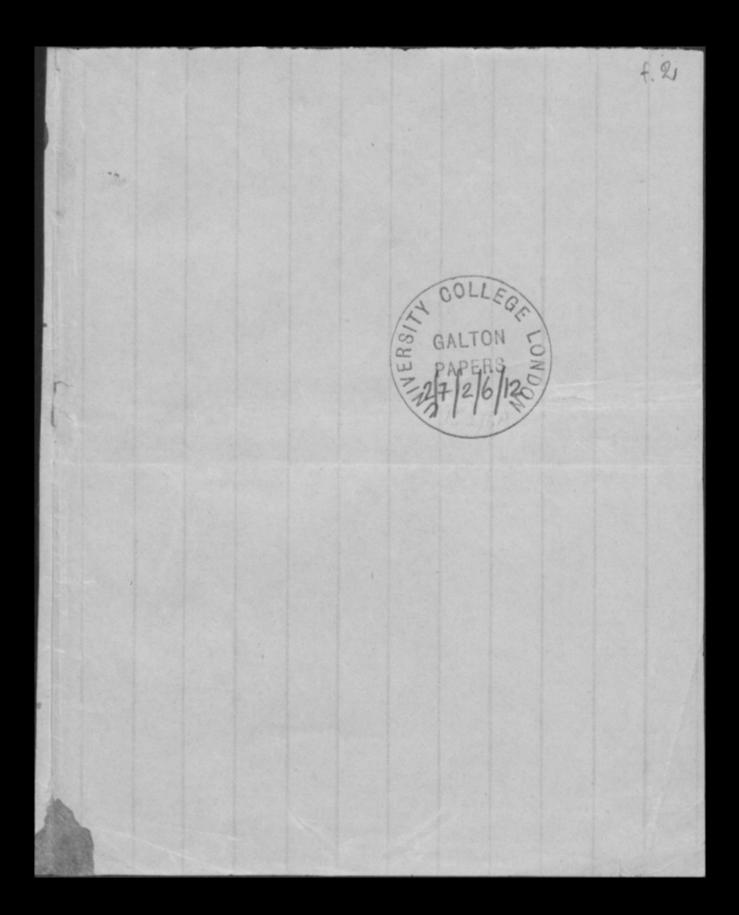
Knife - edger, for the qualities reen not to aldernate but to coly ist. a thing fell a supposed to be fell. (5 The parts I have mentioned enperially seens parfilly mienschie and wavescent, as I wo much be concentrated to a mathematical pour before you have done with it. and get there is - consact with them (not pressing as in the Conventional incultur) hewendons masses, associated with an herduly heat, a cold, but simps aforizing from their bulk. This is clearly abnormal and accounted for by excitent mental states. ouf the have I been able to observe a condition intermediate between it and the the Kaleidoscipie vitions. It was while recomiting some passages of my earlife to a filed one evening late, leaving back with shut yes. The metters) has to

recount whe I no many pleasant including much which to this day raises my auger and contempt. To eager dis I pursue this topic that I had be felt the scene I spoke of Come near to me - press close to with a fort forme as Nwar. She actors, and exactly in turna shepe, a with dir this of colow, but it a degree of distinction acony then selver, moved before me, and I had a sense of being "merformered & on eurtrins". This cocult of in quetin was guite abnownel, Laccompand Sa headsplithing slus-Weturn to the usual. The very inducity statements of Mr. Have (h7317.R.) are as foreign to me as the number forms with which og acquaintance with Jon labours and researches began. But ? eagers ran over your article to look In yerever to what I may call the person fiertin of inancinate offect. In talking it to a speculative and sensitive piers

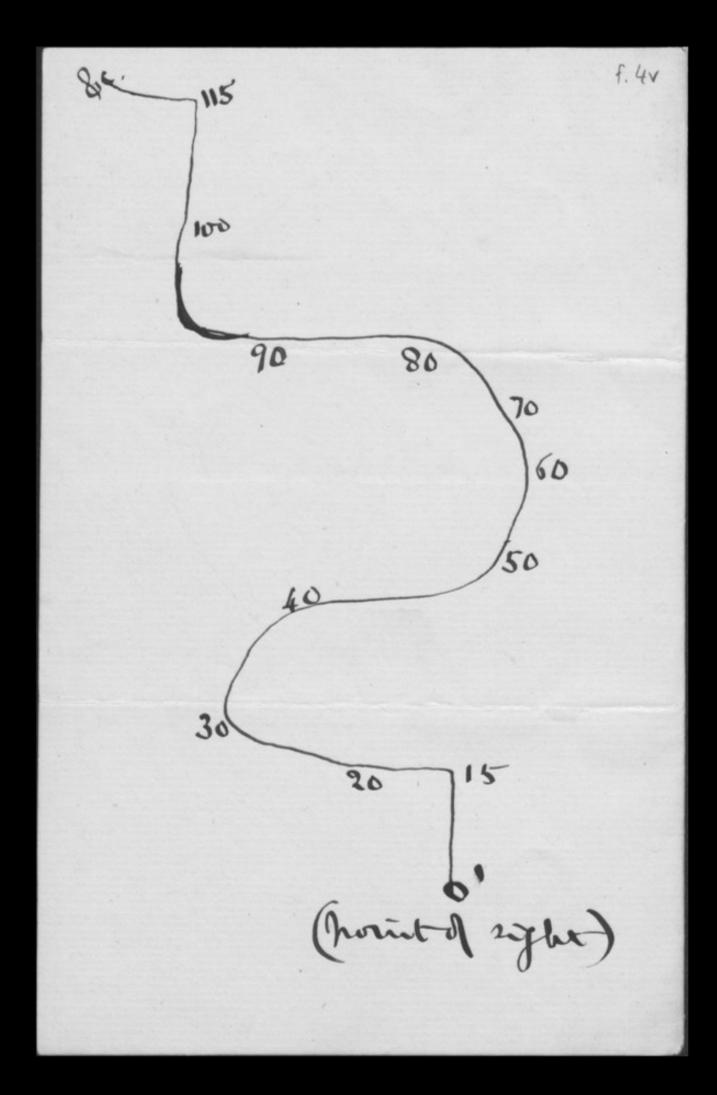
now deceased, he assures we That all observers of nature attribute moods and pamer of mind to every lit y revery - that art required it that huma heings could not no the manimate with out it . / a might take " pouning roch 'ar a tite example; but my acticle of funiture in a house, in fact weything, has its our peculian expression of Character . This i more aking to poets the regulization, In will en; but the comminest lx augle with me - w3. looking pointblank at the tip of the human Juger fills we with implessions of sense, will, and purpose aliding Therein sometimes han fully real. me is malevolat, another inquisiting anothe Infercilion, another hopeful, another infloring, and all to concion the the Jaze of an Animal. An to J. Jallan & Annes Key 5 Ex. 408 & Cames Key 5.23

ang. 6. Larden marter Elr Conclored chellen han marter Dear Si, Dear Si, 9 have just heard today from home (at Orford) that you have kindly sent me two paupplets. I write to thank you much ; & Suclese an account of vinialized muerals given me too late for that pailet I by one of our Chetlenham marters. U-sun, the interesting in heavy

ways ; aspecially the herediting hature of the power, & the aring affect admeating had in determining party the shape of the twee he has care i his sisters . I beg to remain you very truly Watter barden.



Than had some difficulty in drawing the accompanying figure, as the image seems to desert me as I put her to haper, but I think I have described it farily. there is a sharp angle at 15 Cherhaps due tothe fact that I learnt the multiplication table up to that number) her after the ater image proceeds in arves. It is rather confused between 50 280 sin consequence I optim had myself making mistakes in addition when I reach those numbers. The image is in one plane * vertical, the fijnse one being on alevel



With the eyes. 100 is much tothe left of 1. I can hold an image of about 200 monbers at are. I recollect dates by precisily the same image, her e.g. if I try to recollect the last cereting I put mynes at the top of the figures a look down them. If I my to fricture the Roman dates from 30 B.C. to 30.A.D. I fist my ideas are very confused. I look down

upon them until 1. 2 then the figure seems to give itself a linet of look up as I do in avillantical operations Sooking back upon the years of my own lefe the picture is very virid. 1880 from 70 to 50 the 70 line is perfectly 60 60 I may purcher add 18/50 that only one member of

my Panily Land Can dische any image of this character, or has any idea of what I mean when I talk of it, 2 the my sister who is always considered to be much like me des nearly the dame image abough alot as distincting. Wilt her the first change in direction comes at 12 mot 15. PAPERS

Sintenz Lepoz 82, Queens Gate. S.W. January 7. 1880 My dear Gallone (843 Chase been a long time in answoring your Questions on Discelising . But the had is, as you will see , my meneory deens to me to be almost wholly me-- Chanical . and my powers of resulting as nearly Bero as any one's can 7 Gatton Eyre be

be . Take a seene I am any Familian with the Falls of niagara, I can't make out that I see it in any quesi literal sense . nor my wife tills me skedows but although a very good musician she cannot play at all without notes. She plays soon difficult main at sight por notes. It is difficult to understand these diversities , which capport my favorite

f. 9r doctrine that people's Souls differ more than their bodies GALTON Plan read the indosed Explanation of my ideas with request to a Physical Globe. I mally wont drew it, Petermance a his successor I imagine will I am in short convinced that such a globe is a Equirement of saicace. and I think it has a

F. 91 a sufficiently direct relation to those studies in Physical Goopaphy which our beidy Sucourages, to be a proper Seperditure of our Funds of course I am prepared for other persones not seeing it in the Jame light The more pasteboard Gobe Costs about \$ 4.10, I can't in agine the 6 stones to cost £ 20 Sector. Faithfully yours Stthefrey



F. 10v Just I quoted is Isaich 29.8. looking again I find the faries Hparty wore not suffiring from & hanger when their Junses were Shangely decided by hearing " distinct and separate blows of an are and the crash of the falling the When no such thing had occurred SHL

Charles J. Leland £ 11r J COLL 220 South Broadt. Philadelphia. Pas March 19 1880-Dear Ver. 1 had the pleasure I meeting you, as you may remember, at our friend Macmillan's. Would you knowly enform me on a certain subject. I have Memory , " thiswal Rep recontation "or "Mental Manifestation," Dasing my romarks chiefly on what I have read in Robert Houden's maniers and on some remarkable enstances which have came people who having acen and staded abjects could real them so vier al

F. 11v that they caned copy them as if the original were present. Share also and Contarios aderice to strengthen the eye = morning by draining passons: by in the street, and the graning practice in ant = schools, leg in it. Poters burg and Bostan) I making the pupils study the model and then make them copy it from momeny. From an astract from an astract codited to you, I infor that you have united on this subject. If co will you kindly if on me where and when, or give the names fary anthers who have treated of the faculty! This is a bald request, but as I do as much for

F. 12 Lotal olrangers every week I hat that you will not take it unkindly from your deraled admirer Pharles G. Lland Francis Calton Cape GALTON PAPERS

Red - T. Logan ince principal of decost Col Cambridge COLL 29. Regent Street 5th Jan 9 1880 Dear Sir I much regret that great yordstrahou prevents my entering, satisfactorily into your interesting questions Later perhaps I may be able to do so when I will sosite to you again yours very sincerely II Swry Logan

Ling manch Jan 7. For hjed for the Nature and its wonderful revelations. A hers caused here a 'brisk enquiry' are exhausted A. Their Scould lasdy get another dozen filled up if Suught houble you for them



Macomell George 54 Benumont Vt. Portland Place W. GALTON 5- Dan. 1850 Dear Sin I suchere vome answers to your questions, apologing to having been do Lagythe chief difficulty I have his his the fact that the power seems greatly deforent at Afferent time. When it is greatest I have not tried carefully to discours - But the one fact & have always topeninced - a fact which a have thought about for dome years partis the difficulty of altring a prieture which her once been formed in the mind. In answer to one of the questions I day that it is for ible

to add a new object ; but even that Hen fails - In picture a toom with a particular chain in a come, and to take that chais from the torne placing it is the middle of the room so that the come shall be supply - this Seems to me an inpossibility a regardo survey . I have here the same necessity as it note is speaking of the breakfast table , I fining upon me dyect syrouping the others round it. The same is the case n' to pleasure I get in actually looking at scenery - I dystructully choose one object - no matter what they at window, about an clase the - and let all the next depend on it. On this way a deen may be cangle from the hundow of a railway train .

f. 2V

f. 3 For quotations I depend very greatly m a recollection of the page, and the Trant of the Trange where the it tan formand -Yours very success, George Auchaedonell. GALTON PAPERS

J- mann ACOLL S GALTON 726130 5 Kingsdow Villas Wandstorthe Common ame 28. 1880 My Dear Sos Mey Much Regres That they Arounde to Send how an account of What I have Myself Seen of the Bushman's method of Melchung has me Voue Tony Alithed away from

f. 41 my menny. about the year 1860 When I was retiding in Natal Some Small parties Alsustance who had heen for some time liong In Canes, which abound in the Drakenberg, or reland Mountain fronter of the Colony Made Memselves Mublesome by occasional Modurual hards whe the

colong to sweeps away Calle from Scallered Canno of the remoteder: truts. an Whe deter load In Contequence of any to follow up one of they retreating foraget when Mountain Jashettes. Some Mentule Which in the Austruck, and one Whe was apparently a young by was wounded and fell who the trands of the English Colometer. He was

brought down to the Hormtal in helermany: bury for Surgeral heatment, and there, and for Some years oftenands in the Service of an Whe Broudforth, In one of the appland distructs Alle colony, was under his lye. GALTON PAPERS This had tous they Shilfal In the proverheal Buthman ach for awing aumal figures, and abou Severne

gi malan f. Gr 12 occasions I unduced him to Show the how Whis toas Managed aungth his serve . Galton 50 He moanality liegan he follow down upon paker, or upon a stale, a Mumber of Noraled dots Which mexenter no Connection, a trace of outline of any kind, to the minulealed Syc - and looked als like the Starys Scattered

F. 6V promscously in the . . . thy • • • • Karry hull Vome deliberation Salisfier huntely with the Salfectury of these dots he forthwick heyan to kun a free hold two from me to the other, and as he ded to the form

of Some aum at - boulfalo Elethank, auleloke or have predailly deulland Mell, and with Sach mention and accuracy that the annal thethe Could be unnerally have, This tous mountily Une hull a free hand, and buch buch mering dure . hend louch that the Correction of a line to as

at any time attempted. I understow from this lad, who I believe is full hory turth har Mon forth , at angie Gun, in the Moor huer Distuct of Malal, that this to as the place which was undersally Anned by his Muthed In theating their clean butures. I acudealally came upon a Philipuph of the

S: Mann F. 8 Ad Bushin an Friend ma collection of Philipsths Which Professor Ellower had as the lottege of Ingeous for his Recent lectures on african Uluntigg I am GALTON PAPERS Dear Su Ner, huly hours Achers James Mann Mad. Alles. fc

J. S. Manton f. 10 Regent Works, Clissold St. OOLLEGE Birmingham, M GALTON 69 PAPERS 19 F12/6/1300 Movember 291879 I am avery than mak Dear In been able to send you the enclosed paper hepore. Abaence from home prevented me. Perhaps it will not be and of place if I hell you the following. Many years afo, I was clerk m a laye house of business bit was part of my duty to balance the book's monthly. On one accasion I could not balance them, & after a hard day's work went home, I be hed. In the night I dreamed that

at a certain page in the Cash book was a sum which thad not posted. I this sum was the aurout I wanted to bulance my books. In the morning thacked to buarners I turning to the page in the Cash book. yound the sam; but the polio was put in as if posted. On turing to the dedger. I pound the sum was not posted. It was a great rehef for I was then able to balance the books sumedately all these pipures mere vianalised in my dream diaturety, I am dear In. Jours July Francis Gatton Le. Manton

All Clifton Place. Susser Square 1 20th January COLLEG GALTON PAPERS Siz, I benture to send you a shetch of the manner in which numbers appear to me, which is rather leke one of the descriptions in this week's Nature, but not the same. The numbers appear as dots or Short lines, with more distinct dots or longer lines at the tens But their position is much more definite than their form, so that I find it difficult to represent them Where they turn a corner. f. 12r

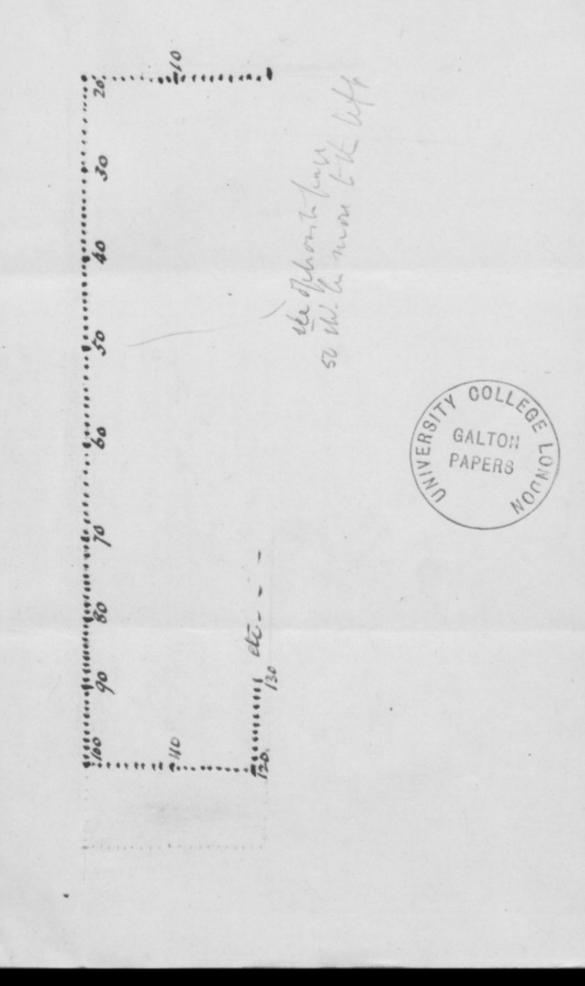
F. 12V From o to 20 they are in a perpendicular line, with a certain Change at 12 difficult to define. Perhaps 13, 14 35° are less distinct than 11 and 12. At 20 the line turns to the left and goes on horizontally to loo. There it troms perpendicularly downwards to 120, then horizontally to the right. But here it becomes indistinct after a time, and never comes lound to the point from which it started, because the diagram Changes. The hundreds are set epart

f. 131 in a series by themselves, like a fresh set of units, and the series of units begins over again. I can remember being able to count up to 20 and not beyond. Possibly this may account for the series troning a corner and as it loere making a fresh start at 20.) Temperatures below zero Fahrenheit (of which I heard in childhood) arrange themselves in a short horizontal line to the left of 0, but not temperatures below zero in any other scale, nor any other minus quantities, of which I knew nothing in childhood.

When numbers refer to the dates of the Things of lengland, which I learned about the same time as the multiplication table, they arrange themselves rather differently. The arrangement is app to change at or near the division between the centuries, the previous century being blotted out, so that I cannot represent the connection between them My Mother's idea of numbers is that she sees the figures themselves arranged perpendicularly as far as 20, (I being the lowest) then obliquely upwards to the right as far as 30, then nearly straight upwards to 100.

145 Martineaer Merti 2 A COLLEG GALTON PAPERS GALTON PAPERS My sister has no such idea of numbers, but both she and my chottur and I arrange the months in a circle. My sester places January at the lowest point of the circle, I a little to the left of the lowerk point, and my Nother hear the top. I cannot think of the months he any connection without this Image Coming heto my mind. I remain yours sincerely Caroline A. Martineau.

F. 14v The numbers are comewhat crowded Together between 50 and 100, So that 50 is not so much out of the middle of the horizontal line as it otherwise would be. I was not aware of this till I began to put it ou paper.



f. 15

F. 16r (3 Retalli of question arked by mil martineous hitler of their mechanics It teste doer not see number Violet J. Martinezu, aged 14, Sees humbers in parallel roos of ten, Stanting downwards. 10 1 20 21 30 COLLEG GALTON PAPERS 57 61 60 70 100 She has no picture of them beyond 100.

The sees the months in a hund of Chinese bridge form, from May to September being level. May Sap Sec .. Jai A new bridge begins with a new year.

F. 16v

Her brother, aged q'z, has no pietree of numbers, nor of the months, but says he pictures certain hames in certain shapes, Jemma being like a dark lantern, Mand like a spade, Ida like a spring etc. This Jam apraid is latter unintelligible.



f. 17

mil marle July Contra January Februari Dear Sor, The above is a figure of the months as they appear to me, all the months taking up Equal spaces. My Mother and fister arrange the months he the same direction of but my f. 18r

mother places January where I have put August. Her months are not of Equal length, but they are not suppciently distinct for her to make a shetch of them without filling the from imagination. In my sister's case the circle is slightly elliptical. and the places Jonnary Where I have put February. Sendore the result of some questions which my lister ashed our niece and hephews. Also the

f. 18v

f. 19 Un Turner Statement of a lady more than lighty years of age, who was much interested in your paper in Nature. Her months Ibelieve are arranged the same way round as my own, but I did not make a note of this at the time

Iremain yours sincerely Caroline A. Martineaus

/ Clifton Place Sussen Square W.

1st April.

f. 20 G. S. Mathews (& with Ruber) GALTON 50 GALTON 50 PAPERS FIZIOII30 FIZIOII30 About 5. 1880. GALTON 6 Sear Madaur I fancied that it would be an easy matter to see with my muido eye the figure pretures which Il! Galton is acterested us - but I are bound to say that after a good many efforts I have failed to Crycine there cep -I do office se pretures with perfuel destauctness especially landscapes but they are more like pictures in a dream than anything else and they come a go

and change quite mespective. of my will a pleasure _ once only when I kept thenhing of numbers there cause with the laudscape a church lower with a large clock face, which affeared to lost mockingly als me for a little tour and that changed with Innething else. Your fait ful horals Gollaslewe. Mip Syland COLLEGE GALTON PAPERS

F. 21

. F. 22 W. Mattens GALTON T 60, Barborne Roud, 272613 C Birmingham. 18th fan 9. 1800 heydenter May accept my beat thanks fitte copy flaters you have heave to obliquing as the dead care. The fact, in your paper are very curies and witcreating With cerfeet the proper contouring of the bed of the Lea in the adminally charts official from lonking on the bus In require that there is a peleminary de the in the way -Va foundings are woh suffercant to advent of the with Contour being perfore put an, a fact ted very actilette tou government with the tad means at their deiforal for work of this halue very fait of trancis galton 28 White theres.

F. 23r to Mathens + COLLEG GALTON 60, Marborne Road, PAPERS Birmingham. 25" Cert. 1879 Coulir I have filled up very balon & house the pleasure flewding it & gan Iroutene to and a face lever: an a matter I had witendad Gracalan toyou al an Thil Soig were long The R. S. S. somed to accor for service's they would underce the Agrographical Achaelman & Jentleik unper fite Coath fruche with the defter accurately Contoured - The Voundarys are groen in torrists but the are us contour lines

F. 23V The Sugliil Coash Mundle he contruced along 10 Falkans, the schor coartes cleaning 100. No & the Department would to their the h g. I. Accorded Jeablish a sch of tauch maps. The mater alandy bublished such as. Rausay's week fleuber are pute videoffand in detail . Jan faithfacton allecather & tr. Salta gen

VILLA GUASTALL RAF. 241 VILLA GUASTALLA. GALTON 5 PAPERS VIA PALESTRO, ROME. PAPERS 24 4 Julian 1880. At Sur Thosat on the 22 to pay a wird to a Treach July, witno Ja Ductel grattraca, Late very friend. my wife & Shad brupaging a visit to ablend asyludic a fred dags preverely; the conversation enterally turned to bliced people. Iguated the oft-geotes instance of the Had mean who bais that key faceed 200 mustles like The Sound of a trucket This when to as quite seed to the Jady 2 pas haughter aged about 12: 2 ch ouce a loskoy idelligrace, passed lection There Thereby Hunsked suce of That sach Resociated colours wetto The Howels? Fended Scarcely Con

prepard what she acesant : where Aru told we that saw briese, chill how all the cash vowers here associetà with colomos: a, wasklack, i was pleitedton If that Jacar lestring to Souithing quite ser to me, set to day some theing uncany Itaktown from both norther & Jacepter, a list of the colours sachhar tacka the rouch. Huy becre: Decepter keothen 200 a black blues Secoly 2 which white 200 0 black. lightgossa 4 The weathing a Samutifice wear Called & Sucretineed Herderict tohim. Matocce tool succe your article in leature Likorty after Smith it Bree. There borote

to the day - a bery cleares looreran end begged that she would feat low mpaper what she had Togsace; Luding besteater that the neight and your ortede buck such suched Elee bad wordta down what I wanted. Eles Thru Inch nee the suchosed borg Ence techle Statement (on black adged fakes), stating that it was written before they baderad your writicle. Jectic Covering letter she says with reference to it i (in baglisho) "Ikrae losked into your wory interesting pefet; and Tunks. Stavid that article about receasing of buy our at de riscon gageas. \geq son, pastes ? cheffre; shelo Sout places dew score sepret un pracannel'année."

I feel pretty sure that their state. much willele of deroice to you in fallowing up the levy cureones tradymbraegot. I tous not a little treeck at the Lattraces with which way Sciratifiedreed cauce auch with inforceation one a tack jest Eo accalogoces to that which recogerications in hegeriand. Juny nexution that I beac Know the Serger acalf lexger most intria eld & theat it was only 2 days back the to id me of this percediarit. Her late bashered bed as seech facecy. grondaithe fully leady bleck melly winh: Greezah Rh. Trancés fatton lage (GALTON PAPER3

F. 266 GALTON PAPERS Depens mon enfance, fai toyours associal le son et la forme des voyalles simples on compossées à des couleurs, et ces couleurs n'ont famais rarie. noir a laune Lable R blanc i 0 rouge ac. vert forme gris fonce an cris clair en ai gris norrate redet on gris verdate len rouge breen on Your donner un example des moto dans lesquels de prouvent ces conleurs, je citerai:

f. 26v blanc, dans, grand, sant, dont le son réreille en mon l'édec de gris fonce. bien mient le coulour brune. She breen on français Spin one Jack penser an gris verdatre. dont, long, mon, ton, Im, rond out tous rene apparence violette gris me fait ponser an blanc "arcont Crevit levi, devis, devie, eto à la couleur argentée de l'eau enfant out gris! balais est nois au commence. "ment, et plus clair à la fin Clair cat un composé de mis et de blane comme la Ain de balais. Jara, Barbara, anna, dont Forto mois Le rien Jinirais pas.

Dans coulour, con cat rouge brun ; lanz est d'un gris ment, blen, clair et indéfinissable . _ de me deis comments il de fait sere je m'ai famais interrage. personne à les dupet, j'ignore par consequents di j'ai herde cette disposition de masparento, mais je l'ai découverte chez ma fille il y a deuk on trois and. Elle avaitalors 10 on 11 onde anset me deman. " da un jour a l'improviste di les voyelles a, e, i, o, e avaient des conleurs forus mor; je la grestionnai et Je découvris en alle pour le promière fois cette dingularite, mais area cette defference spielle whit d'autres couldurs gue

£ 27V mos et que ces couleurs variant parfois, The writer of The above is a Treech to our leg beats & is now the widow of a Dectebaceare. Vheace, Record bes section stely for andy bycans. Auch & leeseoch Vient: greeral Rh. Rome 24 February 1880. COLLE GALTON PAPERS

Mestor morz The Quarries 15.281 Ike Sora albright Grainger Park R.ª X Newcastle /24. Travuis Galton in J. Dec. 1879. Dearfri, pris Dora Albright Sint una post card of yours espring a wish to hears more about the Apresentation I carry in my wind of The munimal series .- It is quite district to me ; so much so, that I cannot think of any incoder body at once, see it (as it ware) is its freulis place in the diagram : the Same as the unation of any goo - Inphil place is any calls first is my wind the camp of The country where it is Situated. My Ennie have of Dates is alos murly intirity dependent on a dear mental vision of their locia

teres, correct' is Wall applicable. The multers seen to approach wor cloudy as I arend from 10 to 20 .. 30 ... Lo to. The lines econing a hundred for numbers also seem to approach is I go on to 400 500 - 100 Begond 1000 I have only the becese of an infinite live in the desection of the arrow, losing itself in dorktero & the mullions. any spind under of thousands returns in my mind to its position in the invalled times from 1 to 1000 ... The diagram was present in un recondens that I want the multiplication table by reference to it, at theage of you d. I need hardly say that the impres - Sion is use one of a property stright live; I have therefore used too

puler in drawing . -I think this unbruces all I have to say but shill be happy to give firsther detuils if at all interesting to you. Have you heard of Similar representations from other persono? Believe un Jomo obedreally Muodow Theiz

in the Dragram. This is as new to Sever dire to it , the following : 1000 int. 3.00 80 20 60 A 30 I have men taken with pairs in drawing the figure on paper : so that its is only approximately correct , if the tom

Community A. Y. March 8t 1880 maken Dear lir: Thave been exceedingly interested in your late memory - in Nature on visualised numerale because I have always localiged the numbers from 1 to 100 in a peculiar way from my carliest recollection and have made many attempts among my friendo to find a similar case without success; indeed I had made up my mind that none existed will I saw diagrams in your article which resemble any own. I associate neither color nor form with the numerals nor doce the figure have any background; the muchen are simply places. In calculating or any other process in which I use muchen my mind goes first to the place and The name of the number follows by necessif because I is the name of that place, The figure is unchangeable and I never fail to use it. I have watched for days to catch myself asing a number of any kind as an idea of collective number of unite without reference to its place without success. The former is not only constant but very vivid. I can remember that it was an unfailing Source of accusement in childhood to let my mind wouder over the figure. It seemed like a play ground. I use The word figure because & cannot make it-seem like a diagram The only way I could give an accurate idea of it-

you will see that between Jo + 60 & began to draw wrong This is because between To sleo the line seems to come neared Br rather would be fore shortened in viewing the beat wire The secult is that like Leeus as near as to only function around to the right - Come to examine it closel & Think I have hent down too low at 60- The dotted live would be better. In general, The number take the Course adicated, going farther away mutil a point about 31 is exactly officite me, above, and at some distance. Between 31 + leo then's a recession in the 405 and an affroach in The To so That 60 is about as near as 3/ but well off to the right. After I get above 100 & begin the same figure over agains and Some when between the 1+ 10 I have taken my stand, on 101 and the Levies is relating the same as when I began at I This is the Case in all strict numerical work - Island at I But in reading history or think's of the events of our century I seem to take my stand on the Scale at the figure Hor instance in remembering our civil war I seem Astand at 80 and look down ward to the Touth west. In think' of the Roman feriod or the begining four era I stand at 18 and look couth slighty east. There ideas do not oftrude themselver, They Come with the number, indissolution associated with their and there is not a date in history which don not place itself instants. There are exception which I find it-

f. 21 voued he to take an annealed wire and hend it to represent the order of the muchen. The reason that a diagram will not represent it in that in my mind it Fraversee the three dimensions of space, not only in general but each step includer the idea of distance from me as well as upor down or sideways, The following refresents it as nearly as fossible : I may say that it is associated with the pointe of the company: That is I never see a looking from the north east or west but & au facing north look's from the couth /100

difficult the plain. For instance in thinking Acfoleon Bonaparte and the evente from the French Revolution with his death I always seem to stand at of in the centuris and 92 on the figure. I do not look back to this as & do to our civil war but forward from 1792 There exception are us doubt due to some civernet ance Connected with the first train Jidear on the Latject in Child hood. I am not a very good mathematician. I have a cousin who is a mathematical tutor in Yale Colleges who great excel me in this respect. Get I am mable to get him to Comprehend hey way of thinky figuer. My interest in your memoir was such that I renter to trouble you with them details. I could add many more but forbear. Yours very respectfull Nhear. Noyes M.D. Comming- Madiion lo A.Y.

F 2V

f. 3r Theodore Noger COLLE GALTON PAPERS Commity N. Y. April 14th 1880 lear Sir Your favor of March VV came much somer than the Copy of Nature for March 25 th and I have delayed auswering antil ofter reading your article in that mucher which has just come tohand. I will by to thake the point you mention in your letter cleaner at the nik of being diffuse. Ich As to objection. I do not quite ander -Stand The precise hinite you would set between Viertino and subjective mental anager, but I will describe as nearly as fossible ney own expensive and perhaps you will be able to classify it. When we shut ourselves up as a perfects dark Home or have our eyes thorough? bandaged so that we are sure that no light whatever reacher the veting we may still connect the ofstic nerve with the thicking part of the brain in the way we do when we look intents. All parts of the apparatus is on The alert to receive and truin-

mit the lucinous in pressions which may be coming abang moment. Now in my own case I do not find the field of vision uniforming black in this Situation . There are a vanity of swifth, moving pointe or line of color (this heing generally the complimentary one of the color last looked at in the light) which form a variety of patterner each one rapide discolving to give place to another. These object of sight are, I take it, caused by molecular or circulatory changes in the retina or optic herve and are conveyed as sense impressione to the brain. These infrasion are Truly objective and the brain recognizes them as such. They come from The optic tract to the brain. On the other hand the Cerebral Centero may originate ideas and combine them so as to present a picture to the mind while the whole sptic tract from the thalacuic outwards is perfectly quiescent, and not even "switched on" as is The Case in the ad-of looking. In looking at such a picture mind does not even affronch to use the optical server. A close observation of acyown

f. 3v

experience leads to the conclusion that the keys itely with which these pictures are seen is conjured of to the imagination and this in aginon existence extende more or here to our own persone. That is we anaque our selver looking with imaginan eyes at the inaginan seene. This arise from the fact that space is one of the fundamental Conditions of thought and as we cannot start a single edea water received or nearly attaching it to come objection space, the idea & our behalding any Any may atim of anything Cannot are in the mind without the exercise, in bring in with it The idea, more or leve district, of observ. ation on our part. It is in this exclusing ideal region that my mind sees the order of the numerals, and it is in this sauce way that my nind attaches the pour of the compare to the Scheme. For instand I may be really sitting facing the South when my mind is occupied with figures. I know I are looking south, but the instant my mind

f. 41

GALTON PAPERS 4 Triker a figure & meagine the The place in the tokene when it belongs and my stand point of observation is south of the scheme, My position south of the scheme look north at it comes into The mind at The Sauce instant the Scheme doer. It is so much a part of the idea that the attempt to view it from the north require a strong effort and when the attempt is succenful the scheme loses much of the significance. The mind is officered with a feeling akin to howe sick In attempting to find Some reason why I should associate the point of the Confan with the Scheme, I find that the Leuse of direction is very strong in all my mental anaging. I sit down to read a story and as the action developer it mover in an inaginar scene of which the pointe of the Compan are settled from the first and stant of conception, suddent the author cays counting about the direction of a

B GALTON 5 + The Work mind or road or the course of come individual which pute everything directly The nevere of my inaging scene of this occurre very early in the secondon I am able to crase the first infression and substitute the me one, but out with much difficulty. More often the first con Ception has taken such deep root that I give af the attempt to reconstruct it as not worth the trouble, This has caused meno little annoyance in reading history and I find it always best in beging any historical reading & study The weap thorough first - I was never "turned around" or confused as to the main pointe of the Company but twice in my life (now 39 year of age) Once was when camping out in the woods - He stopped on a ridge between two lakes, and on starting I found myself reversed. The other nestance was in a square voor with near similar door on each side. After being absorted in reading & arose and went out at the

wrong door. These are trivial occurrences but the mental strain they produced is owide fresh in my mind after the dafter of morey year in the first instance) Robinson mesor, Filgrins Progrew, The Arabian Might and most of Shakesfearer plays are fixed in my nind in scenes which are wholly unaginary, but remain always The same as segarde the fourth of the Company . and the some instance Juny early ready in which these scenes are the reverse of the actual once I have never been able to substitute the latter. For instance my early con-Ception of the passage of the Red Sea and the journey of the Children of Sarad from Lyght to Canaan is exactly the offosite in divertin The the history, but it persist and always comes of first the corrected & maturer knowledge Now of I understand your article in Native for March 25 the my mental inager are subjective and belong to

F. 5v

f. 6r thou you describe as they place in a sort of dreamland fout you say, not related tresternal space. My conceptione, however I in dreamland are none The leve defuite than if they took place in the actual world as regarde directione in space I have been look y over my conception of other series Than the numerical one and find them all equally definite and all without exception Thorough and indescolubly connected with The points of the Company These the days of The week more in a horizontal Circle of which Sunday is the east point, and, what is peculiar is, that Sunday occupied nearly the whole of the east side of the Circle Thus: PAPERS Oleturday Oxida Sunday O Thurk y O medendy & O Guesday Monday

The circles do not refresent any mental image i I more use them to indicate places, In general places not forms are the important things in my mental processes Now, it is impossible for nee to think of The day of the week without instant occupy the profer place in this circle. How it haffeur that Lunday brings me back from the extreme worth to the Southern beging I cannot imagine unlere d- is that Sundays generally Seems long to childre and fill more sensible time The year is a circle but having no especially long month Comporable with Lunday in the week. The Circle has several peculiantice, It-is ellipsoid - nearly twice as long from Afril to Poloter as from for the face west and goes on like the week with the hande of the clock to April in the north, But here occurs a peculiant. Ayon wild refer to my

GALTON E 9 the Noyes F.T. Scheme of muchere you will see that from 1 to 31 corrier me to a fourt due north. Now the number of the days of the month go on naturals in this direction during facing + formy and nearly Is in dlarch ; but in April the bend toward the east on account of the ture of the year ellipse become so pronounced that The 30th comes very much to the east of its the position in the Schem Tween the natural series of muchen from 1 to 30 to run north and the necessily for them to intercalate themselves in the Jenies of month, pointe which is eweeping around through the summer toward the Louthene end of the ellips in October, been culminater resulting in a sharp bulge in the latter hart of May. But when June is readed The necessity for going rapidly Louth becaused overcome the numerical Scheme and from the on to November The number

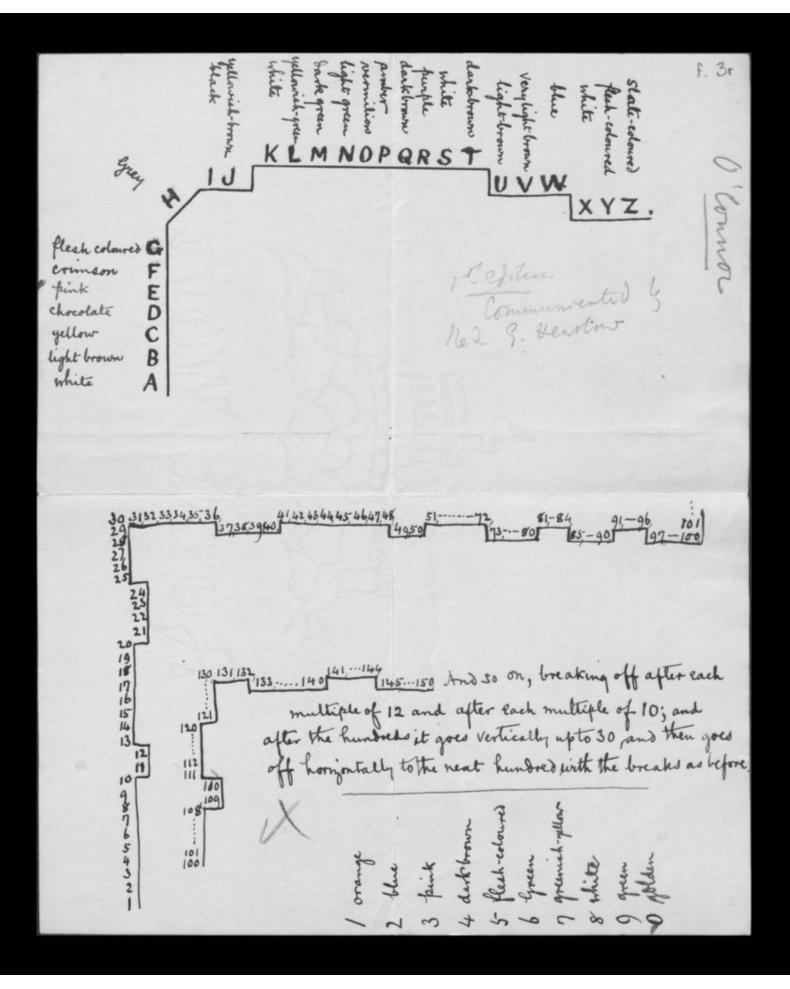
from 1 to 30 representing the Kay of the month are arranged in distorted linco hearing little resemblance to the usual numerical Scheme It would be difficult to draw the year. Achafi a model such as you suggest in your letter would be feasible I will try it some time. A feculiarity of the gear circle dis triquisting of from the week is that the eastern or snowner side is higher than the winter or westerno dide. Looking our gour letter I think the above auswen your questione. You ask if I always associate NE I + W with objecto in my mental field of view ? I think I do. Of course in Some in agnon seemes the associated sense of disection is more visid than in other; but from a vancy of experiments I find that the Sense of direction is always as defined as any other part of the Conception The alphabet is always presented to my mind in an order or line in which the places are assigned treach letter. The line is not

F. TV

so irregular as is the humancal one and it is brewed from the east looking west begins in the Toutwest and ending a little cast of north. It runs along nearly beach or bowing slight by repwords at an elevation a little above The level of my eyer mutil it reaches Nor O in the north west. There it suddens drops to a lower level and runs across to he fourt a little east Jurth. X: Y + Z make a sharp tum downwords and away on a cetim head to words the horth of consithere detaily probably seen to a person not working this way with his mind as the merest rapor of The inaquivation, but as habite they an with me exceedings persistent and are part your constitution I have rever known them to vary since my I Fairin gallowley for Rutan Jato doula Theor toyes

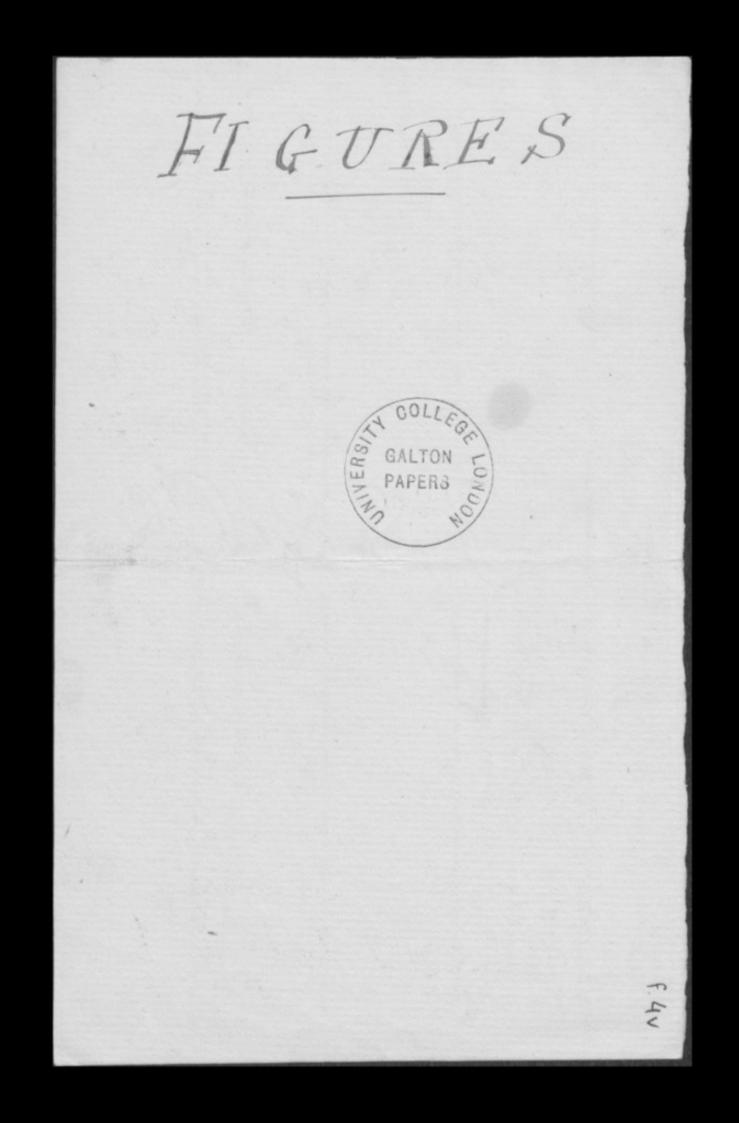
F. 8

2.0 Conne Stanhope St. Regent's Park COLLEGE SE GALTON N.W. PAPERS 2 Wednesday lovening. Dear Sir, Thankyon very much for your thoughtful invitation for March 9th, but I hope you will excuse me as I shall be down in Cambridgeshire at that time; yours Faithfully, E. Olonnor.



1. 2 2 - Connor NERSIA DAPERS UNIVERSITA UNIVERSITA DALTON 7 COLL COLLE PONOT 200 f. 3v

F.4r 1 bronze 36 has the 3 pink of the 6 green 2 blue 85 " " 8 white " " 5 flesh coloured 3-kink 4 so on; but Jeamost que 4 dark brown any reasons for the colours, 5 flesh colour 6 green 7 sfellowish green 8 white Nrsalthough they have appeared to me 130,131,132, 1 as such ever since I as long as I 141 --- 144 2 9 green 120 121 can remborber 4 so on, breaking off at the multiples O Scarlet 6. Connor 111 110 of 10 412. 108/09 61 --- 70 73 --- 80 85 --- 90 --- 96 30 31 32 36 41 48 4950 51 60 101 97--- 100 25 is The figures go up vertically to 30, because, I suppose, they have well got over 24 2021 The teens", which have always appeared to me extraordinary numbers, as they terminate differently to all the nest. 10 11



Darkbrow F. 5r Idark green 2 light green 0 searbet light brown - Adark m amber 2 molet is white Conner Stall K P UVW 03 H Х A, B, C, D, E, F, G, have always appeared to me in a straight line ever since I learnt the scales on the pranoforte. fleich colour g It is an exception to all the other letters , as it only is a suffin breath. comson 7 1, J, have always remained separate to me because they are never used in Euclid figures. pink 2 KLMN.O.P. R.R.S.T. present to me no peculiarity, A therefore remain in a straight line U.V. W. seemd so much like one another & one is often used for another, as "Sam Veller" for dark brown D "Sam Weller" and V is used for U in datin inscriptions. XY, Z, were once in a straight line with U, V, W, but since I heard of the anonymous yellow C light bonn B signature X.Y.Z. (In wrise head) They occupies a different line. white I cannot at all account for the colours. A The letters appear to me to be printed in capitals in the air at about 8 inches from my eyes, with the letter A exactly in front of the bridge of my mose ; the letters from A to be being Vertical of from I to 2 horizon

TETTERS. ALTON C.I.L. F. 54

meveres Jules June 14th, 1880. GALTON PAPERS they dear los Capt. Lalloie very Rudly Ulioduced use to you at one of the Royal Cociely Club duner. last willer and it is on Euch slight frounds that l'write asking a favor. Last writer 1 law a copy of your privilie questions in le. furd to the recalling of Leusations if I clase the

E may be literesting in comparison and con. Junction with those of your English Corres. poudents. If you have not completed your inforences from the answers abready I shall Eujoy very uuch underlaking this small contribution to Psychological Laince and forwarding the results to you.

the subject correctly. It was al Professor Hower's house. and I was How unch alexisted in the questions. Can you Ruidly spare the a copy? If you think it worth While Swill underlake lo Obtain a unover of lels of anewers from the level Utillique were and wo. Usu I know personally or by reputation. They

Hoping you will not think my suggestion los forward I adout to such yours & Truly yours Heway 7. Blore. littetter là your haction place Francis III. Gallou. F.R.S. Royal Lociety. London 10 32 Park avenue. Usas York alig. Dell. & Della

32 Park adrene. PAPERS aug17th Bo They dear lin Thank you for the live pauphlets which have fust leached luce. Ishall Eujry lading thew lappriciali Your suggestions legarding the collection of auswars le your questions " and will Endeavou to obtain unevous, as far a my other work will permit, in the spirit to which you desire. I Can readily see that the Under de part of correspondents

to ebietch the buth in the Endeavors to make the answer appear more me. Roclaut. I hope to be able upon the respensing of the schools to colleges to obtain loure data from them. Les haste 2 au Ever Yours Very buly Stury F. Bons. Francis Gallon Fills. GOLL 42 Rutland Gali PA Londou. Cer.

al.) Princetoic Mensferreng-Uos 7th 1880 lu dear lu I fear you gove the the credit of having wholly forgotten ung undertaking of last summer exer Schould have coulter before to tell You that I have distributed over 100 Copies of your ques. trous and I am how waiting the leteras. They Come in Slowly and & Frust They will hot leach you to late as to be of us let. baulage. acting upon the suggestion

latter, tung College may there for prove alteresting but I hund Confess law not bour languine about any of the letions as yet: and hope you are not out Expecting berry Unch. Captain Douglas Salton was bisiting at aur Country place in October - he told ture il was his impression that you would be Eu. gaged upon this subject for come time longer his listme estent depresentabion perhaps the relevant bould

offered in your letter & have which chiefly apon Edu. Cational institution - and accordingly have luce tokie 6 Vassar (funale) Princeton + Columbia, and more le. Cently lo Hamplon College ba. You way know the latter institution by having heard of it's lingers . who have been all over horope It is for Colored Stidents and of lale they have added a departurent for Indians. Replies from

leach you too late to be of any braise 2 au bery truly yours Hevery 7. Osborn Haucis Callon F.R.S. 12 Rulland Lati Loudou LO. PAPERS

or our Princelon College. Princelon U.J. april 948 My dear Jor GALTON PAPERS Shope to send you in a few days the answers which Thave fully Encceeded in Getting ligether to your Substitus upon the menalizing Faculties. Thave not tound it to easy to procion them as 2 autrapalia When Iwrole yn last July. Many delays have. occurred, partly brong to my own occupation in other matters that pressed upon my true, partly to the Exbrance lescore ly manner in which the peo.

for black and Indian about a month latin & received a fullowship here, al Princelou College In Colorary De me Cosh's enggestion Iread a paper before the Sta. dents Philosophical Club here upou the Orsualizing Faculty and lowe of the results you have abready of. l'ained. The same Evening I distributed 100 questions the subject Excilid Fory qual cuterest and the are. lovers obtained, about fortig in number, leen lo me quile inlittegent and suggestion. Or Uc Cosh has Fren looking through them - desiring me is lead a

ple I sul them to - have replied. Throughout they have afforded me the quateer pleasure - but in the meantine if you have not allogether forgotten my letter I frar Shave Wally undermined your respect for auguican Runchiality. Galton F La Septembro Seur 25 lo Columbia College, where a friend of hime distribulid them. au Equal numbers to bassar, a los. man College, through the presi dent Prof. Caldwell. a third lot to Hampton- Sidney -College. The twell known institution

Coud paper upou the results obtained from they in a fus days chope to mail them to you together. with a number from basear Col. lige and about an equal number Cattering. To my considerable dis. appointment got no auswor fin Hamplon Ledney College - hor from Friends in the Could (Courseand) Who Expected to do comething for You among the colored people to my relivin are all from an. Fricaus & mostly from Mideulo: Schall be disappointed but hol surprised of hear from you that they come los lale. as said before chaos throughout taken the qualest pleasure in he luall

mount of biandle they have caused

Capt Douglas Callon has traited us livice this winder and Shad the pleasure of going over Prof Warsh's Collection at new Haven with him -

I am, dear Sir Truly yours



Hewry 7. Osborn

Francis Gallon . FRS. 42 Rulland Gali London S.W.

f. 151 osborn Elloud. May 10th WING AND WING, GARRISONS-ON-HUDSON. GALTON PAPERS ly dear lie Sent you by a beduce. day cliquer the long de. layed auxwers li your lies. tions. Tregret very unch that they could lead leach you in time for reference apour the 13th De la Coch had the questions in his lidy and diving quilia long illuces of his could not lenoor them .

" best regards to Capt. Gallou tohen you happen to be him again Lau How truly yours Stewy 7. Osboru Francis Callon F.R.J. 42 Rutland Gali .. Condon Sto.

Chaor written to few coles on The back of each builth . from baseare, Presiden 12 and will Enjoy anding any further information You way desire, thuk the Precicion answer are Pretty accurate - those from bassar are use to fall a 2 should have touch . The Rackage went by Wells Fargo MG Express en hasti, and with my

April 5) autivered & Sudored 6. Composite 82 March 22ma B Some them 1002 PRINCETON, N.J. My dear los gallon hope with Composite potrail. Mour other work - loe are go lug to hear from you loon a gain on Mantal emagory-If you have been writing a. how the Subject recently & This year thaon read a nother paper befor the Price You kludents - upon the beall of the aleewers last year . I have also destributid a beend

Uria of question, with loveral added & your original lest -Thave been lecuveray lave they Yall and laterating auxioers -Testimony upon the last ques tion bring out wile seting king idea that occasionally of. Yed's that we have lever lea or heard described k. You take to as hove top. ing to hear from you and that you will lead we of itto la prid your paper teme the Loyal Lustitute Cauce, dearter

ofform april 20th 12 19 PAPERS LA CASITA, PRINCETON, N.J. lufdear bir. Struck you will Eujoy Meeting Ma a. Campbell Grenchoug a Mident in Mental Jaence, of Mucelois. Or has taken great Ulever in the advancantal of. philosophical cludes how like his graduation last year and goes abroad to cludy in the

and Germany. Moil te tous glad if Sean hear through kin of lowe of the second lesulli of your bisitelying. Elearcher Law, dear lor. Vorybruly yours Sterry F. Osborn Franci Valloi Mattel. 42 Rutland Yale. PAPERS Condon Str.

F. 211 A. F. 24 GOLLE LA CASITA, PRINCETON, N.J. GALTON PAPERS Mydear, Sir. Mos vous gratified to hear by yours of april of that your flid the leliviers trour Princelon of luch good quality. The recent. Stries of auswers have trea up 4 or above the former blandard -Ruowing the liter Sthack Lean bouch for it that they do hol-Exaggerale. Le the hope they Will yet to of leroice shave them Copied the lovek and send them to you - all the close of the lay

latter is at the head of his profer Sion in the country and theirs Enough of an artisl Meleutist to like an action hiterest in fler thering the healter, With best regards 15 Cape Gallow Laur Faithfully yours 126424 aderesting by warplerered with

Uru here law more at lessere for had be three wouth and propose lo dart a circular ka ker which way talered you The Idea is to oblain the to Child' development in art by Collection of a large univer of brawings of figure made by die. area. What Shave aboady done he a teulation pay has proved aleresting. by comparison with the drawings of our aluerican Cavages. Spropose luding your photo. graphs to Pack Harowy- the



PRINCETON, February 6th, 1882.

In the Spring of last year I sent to Francis Galton, the English psychologist, a collection of answers to his *Questions upon the Visualising and Allied Faculties*. They were mostly from Princeton students, including also a number from Vassar, and a scattering from various sources. In acknowledgment he wrote me that they would prove of considerable value to him. The kind advice and assistance of Dr. McCosh, and the friendly tone of Mr. Galton's letter have encouraged me to continue the subject this year.

The following series are taken in part from Mr. Galton, and were partly suggested by the replies to the last year series which Dr. McCosh and myself carefully studied. They do not cover so extensive a ground as Mr. Galton's series, but will be as difficult to answer, in some cases probably falling quite out of the run of common experience. The last question is a particularly interesting one. It is alluded to by several authors, but I have not found an explanation which will cover every case.

These questions should be answered accurately, but not too briefly. The latter was an error in many of the answers to last year's papers. There was another mistaken notion—that the writers' replies would be of no value unless the visualising faculty were developed in large measure. As regards this point, it will be remembered that negative as well as positive evidence is valuable, especially as the statistics are to be used for comparative purposes. Mr. Galton's views were expressed in a letter which he sent me last year: "I simply want to know how the Faculty runs *in an ordinary way* in people of different race and environment. You would greatly oblige me if you could procure me such answers; especially if you could induce any educational establishments to take interest in the matter. But above all things I want truth of statement—simple and conscientious self analysis without any desire to pose as peculiar or remarkable * * acch writer ought to consider himself or herself merely as a case, not as a person to be talked about."

Each of the answers will be a small but welcome contribution to this subject of the reproduction of mental pictures, and no one can exercise too great precision in answering.

HENRY F. OSBORN.

Address to-

Warden

H. F. Osborn,

Princeton, N. J.

1260m

QUESTIONS ON THE VISUALISING FACULTIES.

The object of these Questions is to ascertain the degree in which the power of forming images in the mind's eye exists in different individuals and at various ages in the same individual; also how it is influenced by intellectual pursuits and tastes and by the states of mind and body both at the time the images are formed and when they are reproduced.

Before addressing yourself to any of the Questions on the opposite page, think of some definite object—suppose it is one side of the room in which you usually sit when at home—and consider carefully the picture that arises before your mind's eye.

1. Illumination.- Is the image dim or fairly clear? Is its brightness comparable to that of the actual scene?

 Definition. – Are all the objects pretty well defined at the same time, or is the place of sharpest definition at any one moment more contracted than it is in a real scene.

3. Colouring.—Are the colours of the paper, the woodwork, the engravings or pictures, the fire-place quite distinct and natural ?

4. Estimate the relative vividness of your remembrances of (a) Form, (b) Colour, (c) Odors, (d) Touches, (e) Sounds.

5. *Persons.*—Can you recall with equal ease the faces of near relatives, friends, or people you have seen but once ? Can you cause the image of a well-known person to sit, stand, or go through unusual motions such as in Calisthenics? Where a face is with difficulty recalled what mental method do you adopt to facilitate the process ?

6. Comparison with reality,—Have you ever mistaken a mental image for reality when in health and wide awake? How frequently do mental images arise in your mind without an effort of the will?

7. Numerals and dates.—Are these invariably associated in your mind with any peculiar mental imagery, whether of written or printed figures, diagrams, or colours? If so, explain fully, and say if you can account for the association?

8. Specialties and tastes.—If you happen to have any special aptitude for mathematics (either geometry or three dimensions of pure analysis), sketching, instrumental music, or chess playing blindfold, please explain fully how far your processes depend on the use of visual images and how far otherwise. Are the images which you recall most readily associated with subjects for which you have an especial liking or aversion ?

for which you have an especial liking or aversion ? 9. Emotions.—Can you recall emotions or states of mind and feeling as clearly as images of external objects? Which do you recall most vividly (a) natural scenes, (b) persons, (c) states of mind during prominent events in your history ?

10. Physical state.—(a.) Are the most vivid mental images that you can now bring up associated with any definite physical state at the time you formed them, such as active exercise on horseback or in running, or such as comparative repose in reading or study? (b.) Do you seem to be able to call up mental images easier at one time of the day than another, or in an active rather than a quiet state of body? (c.) If you have ever experienced any impairment of vision how has this affected your visualising power at the time or subsequently?

11. State of mind.—What was the state of mind in which the most vivid mental images you can now recall, were formed? In what states of mind can you recall mental images most readily?

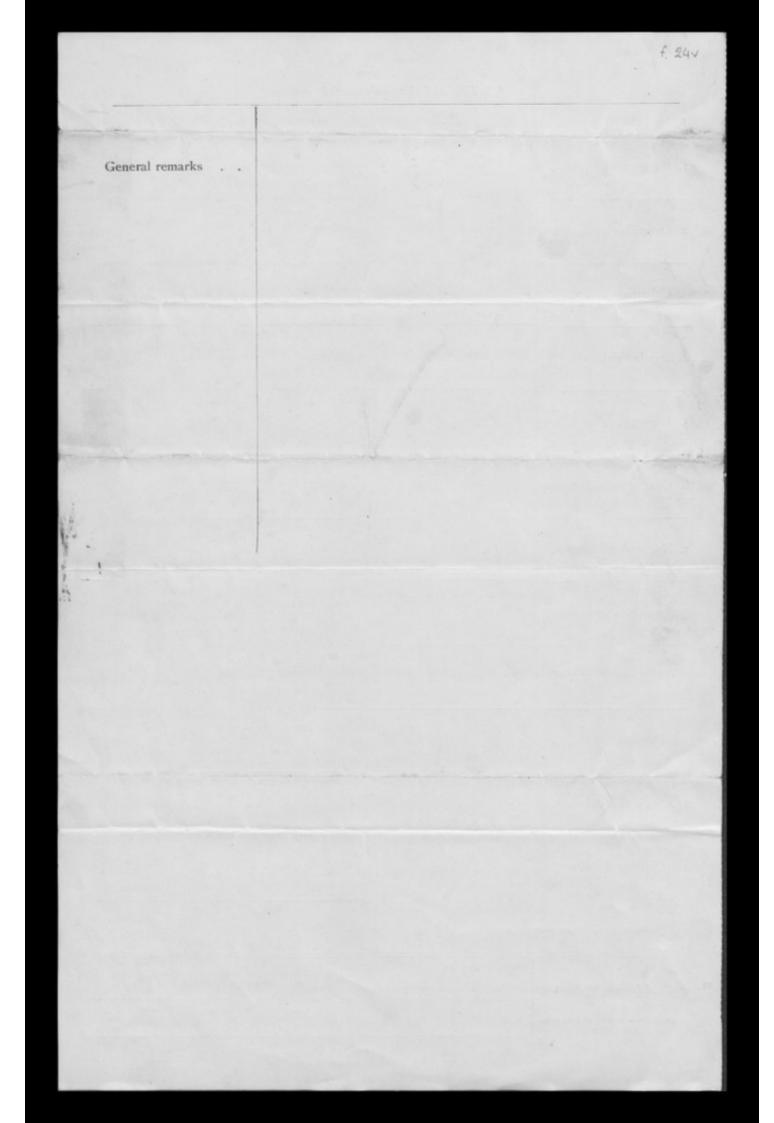
12. Childhood and age.—Have your powers of visualising varied much in your recollection? At what age were the earliest mental images formed which you can still recall. State if you can what is the character of those images, do they seem as bright as those formed in later years. What events of your home life in childhood do you recall most readily or vividly?

13. Have you come suddenly upon an entirely new scene and while certain of its novelty felt inwardly that you had seen it before—with a conviction that you were revisiting a dimly familiar locality? Mention if you can an instance or two in which this has occurred. Has any satisfactory explanation of this experience ever suggested itself to you?

General Remarks.—Supplementary information on either of these questions written here, or any personal experiences on this and the allied subjects will be acceptable.

| *** This half-sheet only need be returned. | | | |
|--|--|----------|-------------------------|
| QUESTIONS, | | REPLIES. | |
| 1. Illumination | | | in the second second |
| 2. Definition | | | |
| 3. Colouring | | | |
| 4. Relative vividness, . | | | |
| 5. Persons | | | |
| -6. Comparison with reality | | | • |
| 7. Numerals and dates . | | | |
| 8. Specialties and tastes, | | | |
| 9. Emotions | | | |
| 10. Physical state | | | |
| 11. State of mind | | | |
| J 2. Childhood and age | | | |
| 13. Unconscious memory | | _ | GALTON F |
| Full Address of Sender. | | _ | GALTON LON PAPERS NO |
| | | | |

F. 24r



Gustave Manr Stoures El for me en How Joubridge (Rent Souther of Jon Journay 22. 8 Souther of the Jon Journay 22. 8 Ju Je January 22. 50 Having reco this the Filming only your charmingly interesting Paper in nature of last week reature to trace on The opporte page my accustomed way of representing Towardy The Series of the numbers. My daughter (aged 21) having read the article yesterday Jatonus me that the follows a Finilar place only her Jeries having no bear at 25 proceeds regularly from left to right. Jeaunob Jay that my bent an 25 took its origin from the gach that

at a Date (1825) eading with 25 I began to have more clear recollections (being born In 1819) My explanation does not Satisfy me because having had in my child hood many tally Told by my graced father of his memories of the forst revolution in France always puch the Corresponding dates to the upper left have part of the teries Tomewhere about 90 and on to las Also the many tales which Theard about the first Napoleon were always located by me to the right hand bottom , I may Cay muy Sories its now intrin ately intervoven with chronological dates - The century being put to between g and 18, and The other two thighters to theirplace in the large beries.

4/ my Jon aged 16 2, days he follows no Series - he respendly his mother who calculates aterns in counting on her finger)- vertifi Cations is to her eatier - I may and that when my daughter was a child they 6 years de) the had much the traits of my mother, in a childlike way of course, agu 80 70 60 550 40 misty region

my occupation with higher mathematics way begune only when I was fully 21 of age to that I cannot Jay that calculation have anythis to do with my drives . Mental Caladation Therform by prettice and not very conglicated ones: I trust more to jien and preper. you will seemy name first wi m 1857 among I foreign members by for W. Nowan Hamilton - where memory is very that to me. The misjound way corrected by 14 " griff ites in 1869) remain respectfully. larry Sir Francis galton et that .

22 Hallow Now January 31 80 Tombridge (Kent) Dew Tir I have to thank you for your knilly dending me a reprint of the " visualized mumerals accou - Sanying your letter of the 23. May I now look forward for the "Shedule of revited question which you offer to vend to me ! In a poloriget to your letter you say you will give my memoir on Vegg=.

to one of your friends : may & wenture to put in my turn a -quite extraneous - question ? hamely (in the hypotition that you , or he , will forgive Such a curionty to one Civing in a thorough technics grown all inter course as to what is your on in matterentic) may I put the question ? m what light is the quaternion method looke Mpou in England?"enduring Scotland where of course there is The

Soucty which printed my sett memoir) as much as 7 can gatter, in my Solitude, upon The subject is that there exists very little knowledge of what the Said method really is , and That it is not introdued genuly the the borhaps I and Too bold in putting Such a question - but is not agreable, Then Silence will bet best answer yours faith fully Francis galton Esq?

February 6 1880 GALTON PAPERS Toubridge Kent. Dear Tir I have applied myself to answer the questions to the best of my powers, and if Thave Telayer Free doing to from Wednesday morning to today Friday it is not that I have Shedied my autwers but only I must Say I have that little by little got nigs of acquainter with the Trift of the question - before I put new to payer and then

I wrote in as unvarnished a way as you will find it Imeau Tamafraid you will find my autwers unevenly put. Tray accept my thank for the gift of your pauphlet: your pour of it is plaine sailing enough To the reader, but Thall also try and follow The mathematical part. my two enclotures will speak for theateling but Tam ready to

auswer any question about Them, or any others, which you would be pleased to hat to me Faith Jully yours g Rarry. GALTON PAPERS I many Juy That the "grand mother" myniother / loticed in one of the Series In not teach the child to mayin The numbers in a derice, but that The Series Cour to her to to lay unawares without being to much as even spotten about by her the child) - The freuch dury Dix sept, Tix huit were a Stren bling block to the your nind there for Theguesance

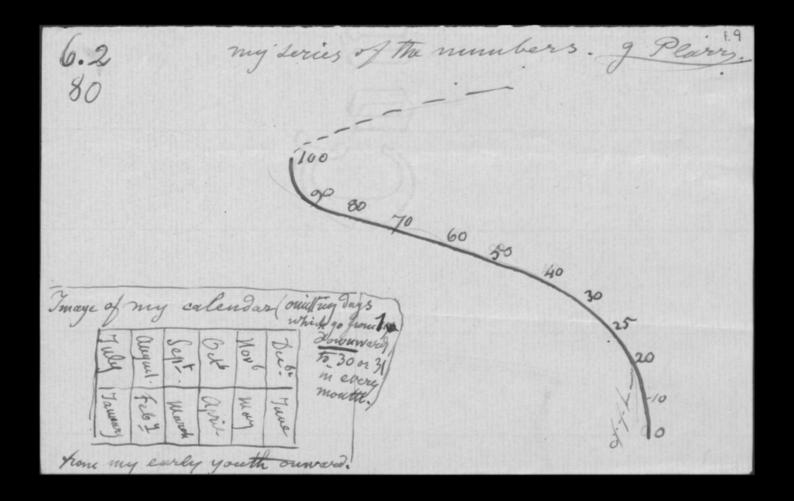
The Jays, a little "nixed - There The. Joinante hoir and quatre wingt The They recubered the upper boxes very awkward to the Imall brain. although the conversed frelly in Frenchmith her grand mother -the Did us leaves french by Study -Francis Galton En F. R. S ste oto to

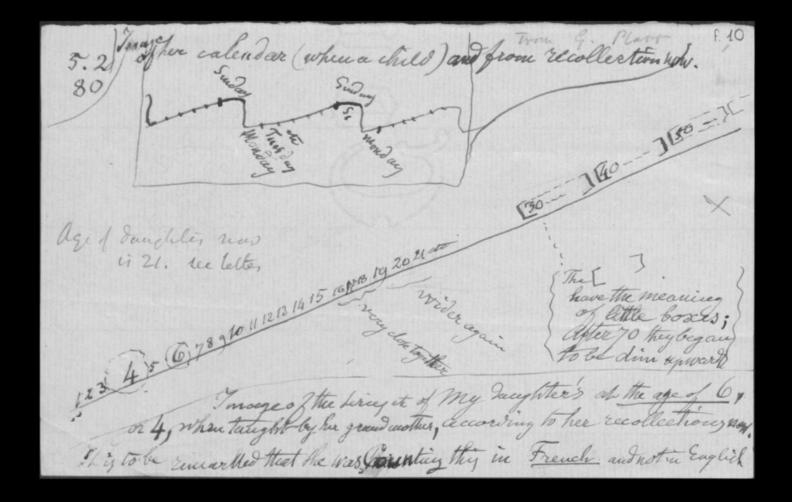
PAPERS & G. Plan 7.2.80 Note on my answer to question 12, letter Ce: I am controous of having made a blunder, and my answer ought to have been Very faut. I fell into the delucion from The fach that I have a Meen perception of Juells; but This quite enother Thing That Mapower of recalling the perception in its life-colour, For that I am unable beyoud reproseining of the String, Joto Jay, on the olfactory nerve, In the music or discord and

F. 7V Acase do not magine That I committee a Similar blander in respect to the question about the power of reproducing mages of Junery. I may add that betides the images which I Can recall ah will I and often herpiced of having The visit to to day Dige this or that view quite unexpected and without myself being able to find any the as to the reaton why full this or that view plunges up Juddenly.

PAPERS 9.2.80 Rather than to dead this And thech empty I will teanswer to the 2° point in question 9: I must Jay again no; but if I was Socalled The Ipiritualithic School I would Jay : yes : because a few times, when at work and overcoming Jonce difficult problem by quaternions I have felt near me the mage of Stanilton, 7 better say his person and showing hinself approvingly to me I must add that I Saw him only three times

in real life, , and only have inforced Conversation "185The gaverne the his book "Lectures as a Weren and I, ingrate, after having read the two first chapters and finding nuybeld fatigued and al aloss to know where to be Was driving to, left the book Turead - and only in 19/1 Figuragain but this time helped by Jait's theatise I am not hopelog as to the preservation of the method of 9. - although the present years seem to be against them ele ste ste if apparitions, of degrarted ones are possible then the apparition to me of Hamilton was, or is, one inspirite and in Fruth , as it ought to be.





GOLLEG NWN February 9 1880 SALTON & Tonbridge VAPEns (Kent). My dear fir How can I thank you enough : for the real Kindney which you have bestowed on me in procuring The answers from Three eninen men on my enquieries about the quaternion method. -Jam now reachared on one point, namely I was in fears that the method Stood accused of Some Defect hiden in its foundations (or uncertainty & Jource of error)

of which Twas not aware and Whith was unable to find by myself, while thes might have proclaimed It? as this is not the case, and as the only reproach (which I can find) is that the method is unfit for the treatment of quantics of the higher degrees, Tallow myself To surmite that this is the quarter in which the hopes were not fulfilled which the method had raised at the time of its appearance 1 However that may be I Shall now cling

with a feeling of security To what ME pottes woode Jaw in his address at Stiblin Report of the B.A. 1878, page 17, middle of page) ... "aboah the marvellows " Calcules of quaternion " which is only now beginning "To be fully understood "and which has not yet a received all the "applications of which " it is doubtly capable (The underlining is more) Town it that when I read the 18 month ago I felt the effect of it

F. 12 v marred by the additional remark which terminetes The alinea from which the quotation is taken - and This arole my enquiry to which you have to very kindly responder. Sincerely yours 1 lary GALTON PAPERS Francis Galton Esq = F.R.S ete te the.

Plarr October 19 1880 Tonbridge (Rent) GALTON PAPERS Dear Sir Tremember having, in my letter of February 9th last, made some mention to you of a certain faculty which under gavourable Cerculstan produced in my mind's Ear The tentation of mutical Chords lasting, Jag, for half hours at times and this from early youth hill lately ? Abut by the parage Francis Galton Esq

F. 13r I have to thank you for the "Visualited numerals" the repent of which you had The Kindney to send to me in July last -GALTON PAPERS

F. 14r of which Tam bold enough to Level, maloud, a Copy. from the hand of my wife who had read to me the panage as something quite new and unknown to her) By the date of the book you will see that in February I did not know of the much more reveloped Saculty in the respect. Perhaps the existence of the thing in others might form the hibjert of an additional gecetion annungs your enquirie ? Of course as The alethor in question is a pock the

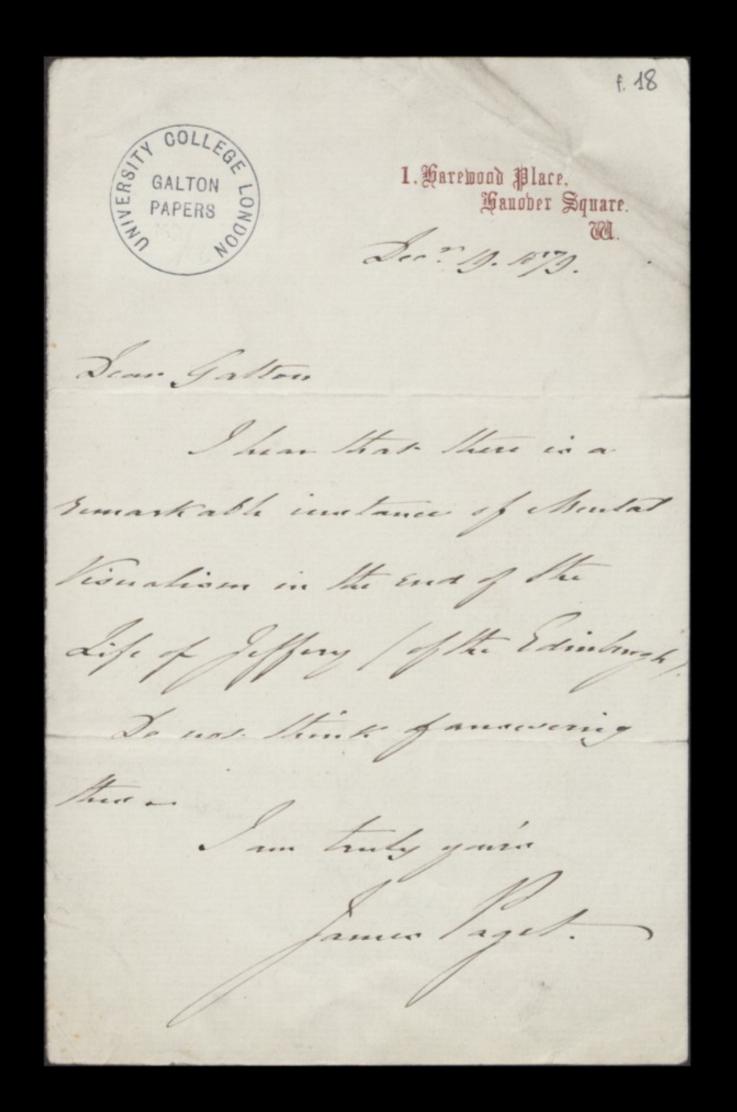
F. 141 hothenes the talent of description in a fartigher degree than the one by which I could explain myself, nevertheles ? Can publicite to having had nearly all the experiences of which the speaks, - I must except the tones out of reach of the ownary Maley in my instance also I cannot speake of gazing on the bounds. Very Succerely yours Carry.

Communical de Estract from the Memorials by Gustur Plass PAPERS of Frances Ridley Havergal by her seeler In V. G H. publiched by James Mirbet 21 Berneis Heel date of Prepare april 1880. Page 151. the the train I had once of those curions Musical Visions Which only beny lacely Visit me. I hear strange and beny beautyer chords greesally full, slow and grand, Succeeding tack office in most withersting deguences. I do not surient theme Scould not they pass before my mind and I only listen. Now and there my will seems aroused when I see ahear how some fine lesolate might follow, and I seem & will theat Certain Chords should lowe, cans then they do come, but then my will seems saspended again and they go on quite hidependantly. It is so helere, = my the chords seem to fold over lack other and die away bour wito husice of infinite soft all, c Then they unfold and open out as if great Curtain, where being with draan one after another, widen his the heir till with a gathering power villening bling opened out before one, and a sort of great blage and glong of ausic such as my outward lars heave heard gradually swelles out into herfed Sublinie Splusous. This Fine there was an add Statuce I seemed to hear depthy heighty of sound beyoud the Scale Which human lars Con Secieve-

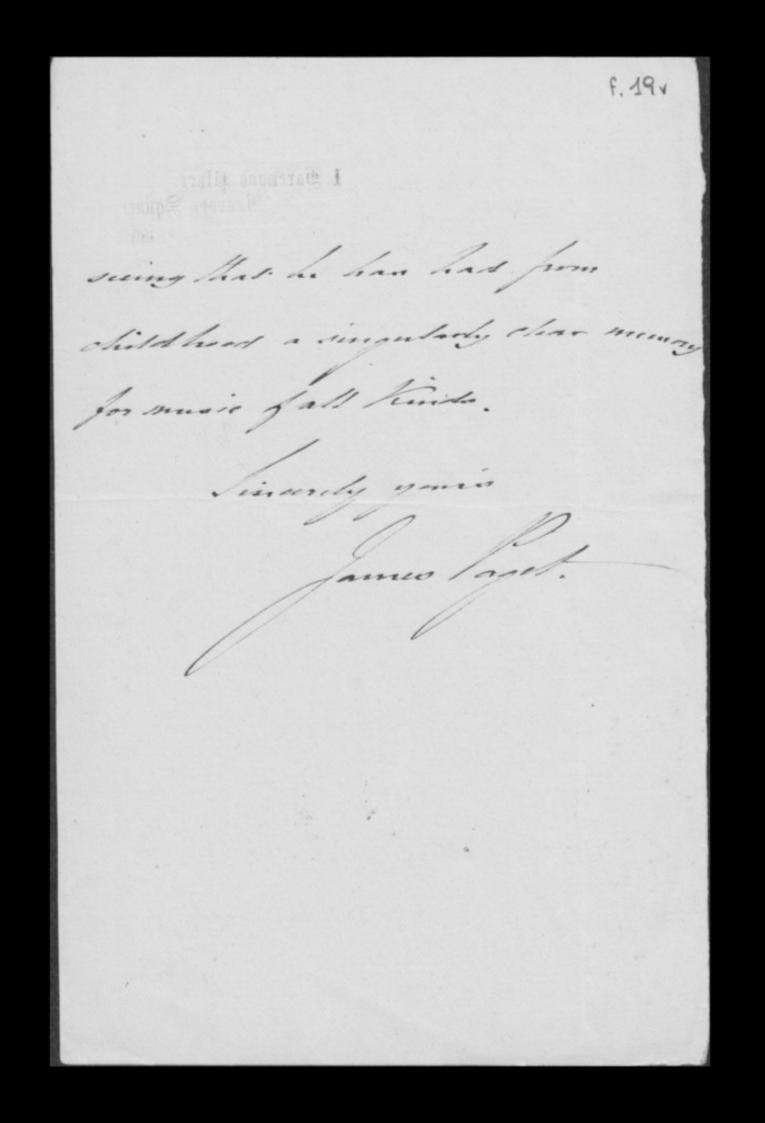
heen far up Octaves, like vividly twaikling starlight of music, and highly clow vibrations of gigantic strings Joining bown with grand themsees of depthis, oflases below any thing otherwise appreciable as heusical hotor. Then all at once it secured as if my, Soul had got a new sense, c I could bee This huice musee as well as hear it; and there it Was like gazning Down with marvellour abyses of Sound and up with dozgling legions of wheel I the lype would have been light & colour but to this her sense was sourced. It lasted perhaps half are hour but I dout Ruow exactly; and it is being difficult to describe it in words by f R H.

GALTON RAPERS f. 175 hij. Paget 1. Harewood Place. Hauober Square. Ju: 1. 1. 177. Dear Gallon I want to note a favour pour you - D' Benediks. of Vienna has sent me his further stresen. him on the brains of friminates, which, if you would like to me, of Swith hand you , and he when whether any similar shows times have been made in Sudand - I believe I may say the? has. Salould matty lite to sund

f. 17v the source of the that beach anny A " 2 cha 2.7 allon e COL NERS/7 GALTON



abht Stephen Pager) A COLLE 1. Harewood Place. Hauober Square. faire MM. GALTON PAPERS Dran Gallas Inture the second of the Sahars which you sout me filled ... by my grungent son, 24 years all. a very observant undical student. you with so that his faculty of vienticing is searchy quater than mine, and I find that in two I his holliers there is just the same defect - Sin the more runast. - able in him in surboch of music



F. 201 W. H. Prece A COLLEGE Bothic Todge, GALTON Mimbledon . PAPERS NO Keby S. So Dear Anfactor heture you your

guines autward.

hemember many years

ajo when staying at an hold in Southampton seling

a stort military person fitting

inte quite an excitatio state

ontaking up a book of

musice. His face Alushed

her eves alaber and he was tordently in a spenes of mental trance. Got ento Conversition with him and found that he was a band master of a requirent. He loud read music toperfution and around me that he loud mentally hear lucy histument othis band herform the preil he had hefore him. Moreover that he enjoyed reading hun i

more than listening to it, for his mental rehearsal make no fatse notes nor ran out of hind, and that the music in his brain was perfect. Perhaps the power is prequent amongst musicians. Your questions have brought to my notice a species of mental Colour blindnes of which how guorant. my bump a toinliky a excertent but I have no bump of

21V Colour and yor objectivity I am not colour blindy. I rever forget a face or as places but blaundt recally The colour of a single dress I have seen today or any other day Juninghury hr. H. heere GALTON PAPERS Tranci falton Ez 2 R.S.

april 29/80 Theece F. 22 W. Preece told me last night al the hard for Source that since writing to me about or Fauliting he had practiced recalling colonis and had been most saccetful He was continually trying it and could not do it perfectly and the exercise Atter faculty gave him Great pleasure. GALTON PAPERS

Raffalovital (f. 1 Maris. 19 Avenue Hoche. COLLEGE LONU GALTON LONU PAPERS 770 Monsieur En lisand vos remarqueebles recherches sur la mémoire visuelle, je me suis Comande si l'imperfection organique de tout, tette que la myspie, ne constituait pas un obstacle scrience a'l acquisition A à l'exercice de la vue rétraspective des objets? Cour pouvoir se représenter avec netteté et precision la réalite absente, il faut en avoir en préalablement une vision distincte. Les personnes Cons la vue est basse n'aperçouent

le contour des objets que d'une facon in-Octerminee et vague; le phénomène de l'inadiation, qui fait paraître les objets clairs entoure's d'un fond sombre plus grand qu'ils ne sont effectivement, comme sils emficitaient sur leur entourage se renouvelle sans cesse pour les myofes. I stat constitutionnel de l'organe de la vue est il entre pour une port queleonque dans votre statistique pe la memoire pittoreque? de suis persuade que les personnes cher les. quelles vous aver trouve' la memoire visuele this - developpee joursaient d'une vue excellente. In pourrait objecter, il est vrai qu'une personne naturellement Distraile, fil elle

C GALTON F. 3 GALTON F. 3 PAPERS C. Y Courie de la meilleure sue possible n'abservera pas suffisamment les objets pour pouvoir les évoquer en copril dans leur ensemble it pans la simuetanie te de leurs Détails. Tandis que d'un autre cate. Des habitudes d'observation, une attention portes vers laspeel exterieur des choses pervent arguiser une facutte faible, et ager fovarablement sur le mémoire optique. Nos recherches ont porte principalement sur le jeunesse Des écoles, à l'âge ou la vue garde taule som acuite. Ne vous semble - t - il pas qu'on poureit transporter plus lois la Dépendance entre la structure Or l'out et la manuere denvisa ger les choses dans l'ardre intellectuel

comme Dans l'ordre matériel? Une personne myspe ne considerera pas les événements Ce la même facon qu'une personne pres. byte. La premiere pourra avoir plusde finisse, la suande plus de périetration. L'une verra trop les détails et pas asser les lignes générales, l'autre négligera les détail Jeaurne s'attacher qu'aux divisions prin cipales. Est-ce votre avis? Te tiendrai particulirement à le connaître. Il cate se vas curienses investigations sur les images mentales, vas recherches sur la participation m'eonsciente des forces latentes Que cerveau mont singulièrement intéressee. I avais en occasion de remarquer cette sorte de Qualité, de Décomblement qui se praduit pans le travail cerebroit, une partie agissant au grand

3 f. 5 1 COLLEG GALTON PAPERS your, sous nas yeux, avec notre consentement, l'autre élaborant en silence son travail cache; son influence, pour être secrète, n'en est que plus welle. l'est elle qui bui sauvent nous fail madifier subitement le plan d'une composition, l'ordre que nous avions fine d'lavance pour nos arguments, c'est elle encore que quide notre plume Dans les correspondances familières, et nous préparent la surprise Oe nous faire dire des choses ausquelles nous n'avions pas songé un instant auparavant. Mais cette pourtie is consciente se partage elle mience en plusieurs courants. Il m'est arrive plus d'une fais de constate,

a l'improviete l'existence des trois courant, Pistinch, inconscient, aggissant simultane'. ment, at à l'unsu les uns des autres, et emer geant taul d'un caup au grand jour de la conscience. Le moment de leur entrée dans le Comaine conseient marquait aussi celus de la cessation de leur activité : on au rait dit une colonne de fumée, qui un moment visible, se dissipe en montant, A pisparail bientat au regard. Di nous m'y autoriser, Monsieur, je prendrai la liberte de vous moger un article que j'viens d'achever sur vos recentes recherches a' propos des images mentales? Il ne me reste en achevant qu'à vous prier O'exenser la longueur de cette lettre, et vous offrer en même temps l'enfiresse demonatione et de mes sympathies litteraires Marie Praffalovich

A COLLEGE Paris. 19 avenue Hoche. Lendi COLLEGE GALTON PAPERS GALTON PAPERS Monsieur Jes influences histeditaires si obseures, si enveloppées, si enchevitrées par le croise ment des deux courants / père el mère avec leur contingent organique d'acce. mulation amestrale, mélanges avec les Oispositions individuelles des enfants offrent un sujet de miditations à la portée de quiconque s'el posé un fois en so vie to question " do qui l'enfant tient il tell qualite ou tet defaul ?" Ordinaerement e'est pour les défauts qu'on est le plus curieun de remonter à la source. Guelquefais, cepen Pant, e est un autre motif qui quide ees recherches: on verch retrouver cher

f. 7v les parents les germes de telle dispositions O'esprit, ou de telle aptitude qui s'est dévelappée A perfectionnée en se transmettant, com me vielle avait beneantre un terrain plus propier et des conditions plus fovorables. fovorobles. bywand on examine l'ensemble On earae. tere moral et fekyergine d'un enfant, on reconnail souvent une influence pre ponderante, soit Que pire, soit de lo mère, Ordinairement c'est la mère qui se reflete le plus dans les inclinations des enfants, étant dons un contact perfituel over eun des leurs premiers Jas Dans le monde, ou moment

au les impressions sont les plus vives. L'ai comme deux enfants élevés de la niene manière dans le mêne milie, fort pissemblables entre cer, mais ressemblant chaeun par un coté a' leur mère. Le premier avait herete des tendames émotionnelles, de taut ce qui tenail au scatiment, au Gemith a'la manière per concevoir la vie, etc; le second tenail de la mire ses disposé. tions intellectuelles, affinces et ograndies par une organisation écrébrule caquise. Peul être qu'en groupant les traits de caroutere héréditaires, et en les ramenant soil au domaine sensitif, soit au Comaine mental, pourriail on orriver å preceser povontage la feart que

f. 81

PAPERS f. 8v revient à chaque parent paris l'accure commune. Le frère aine de ces deux enfants ne rap pelait en rien ses deux parents qui daient eousies germains) mais affrait le type génerique de la formille, considérée dous ses dispositions pommantes depuis troes generations, Un exemple survein d'évolution ou de retragression, e esta sous à décider cette question, m'o été communique. Mue femme d'une constitution d'esprit moi bede, vans rien de pathologique, neanmouris, menant une sue nomade, solitaire, se croyont l'abjet pune surveillance secrete, avoit I probited

GALTON LOND Octourner la têle en arrière et de regar Oer s'In'y avail personne deriver elle. Son enfant unique est ne aves des yeur cont l'écartement est plus grand que celo n'a heir dans le type humain. Il feut aunes, sans tourner la têle, embrusser over ses regards une étendues plus grande. Sa demarche a cece de particulier qu'aver une jamlee it imite les mouvements habituels a' son fiere, tandes que l'autre fued repête la spacen de marcher de la mère. Dès que la breaue Scientifique aura publie mon article sur les Images Mentales, je me permettroi de vous l'envager

f. 9v de me propose de rende compte dans le Lournal Afficiel de notre aunage: Hereditary Genius. Le vous remercie de l'omabilité de votre lettre et de la promptitude de votre réponse. Note illustre amiell. Herbert Spencer, mo egalementhonarie p'une réponse fartabligeent. Si vous le déserier nous pourrous un jour represente note entretien sur les rapports De la structure de l'out auce les tendances (espril. I a' plusier foits asser concluous &' vous soumettre. Veuiller agréer, Monsieur, l'inferenza,

F. 10 Ce mes muilleurs sentiment. Marie Roffalavich

Si Rawton Rawton

Drayton Honse, Mest Drayton.

A COLLER

PAPERS 7/2/6/17 5

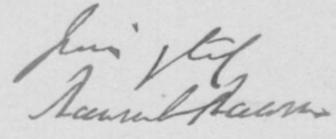
GALTON

16 th Sat. 1819

hy dea Jalli

I send you may al Experience in answer to gut Lucius. I here the same day to are the opportunities our hat at presat I and To much compaid, let

and wall to Lack them ach



f. 11

Angta Kun - 16 - fas 1880. Marythanks foto aly of haters. interesting ! The publication Station can scarrely fail to prouse you many tolaniteered selditions to your the, I perhaps some new forms of mondisation hit u h Maion



F. 140 Horbert Ring (and mu is teparate see C. Wilks) COLLEG GALTON 40 Victoria Park Road PAPERS 2 7 2 6 17 0 Mch. 8. 1880 E Dear Sir, I enclose the psychological diagnosis of a young lady - hip M. Wilks . Ther father tells me that she "Concretes everything"- canno hold an abstract edea withant some concrete representation I am going to call this evening on a lady who is half Jahitian, and if I get any interesting results will send them to you at once that they may be in time for your paper: I suppose that facts about foreignes

are specially important. I think I can get to see a negro boy educated in England, this Evening, as well.

F. 14V

I am, dear Swy

faithfull Jours HerbertRix.

F. Galloulsyths

Mile man willes tried to draw the series of numbers, but could not manage

the perspective of the spiral turn to the right.

F. 15

with wetnes Ports F. 161 I aded to a furthere my that the traction twhere fll life were to se. Carthein May 6 # 1880. A COLLEGE Sur hygriena Mr Ward of Frunty Colle has urged me brend you a usto of myrypercence a the weather Loisualization y numeralo. See the numerals (Modia) blach the whete fround, in pout of me in the order thown a the lough Stapare athe Enclosed sheet. Sappear the looking down upon them from a slight Succession and to be standing Close to the figure 1. Ashonglight pour behind falls afon the manuerals illuminada

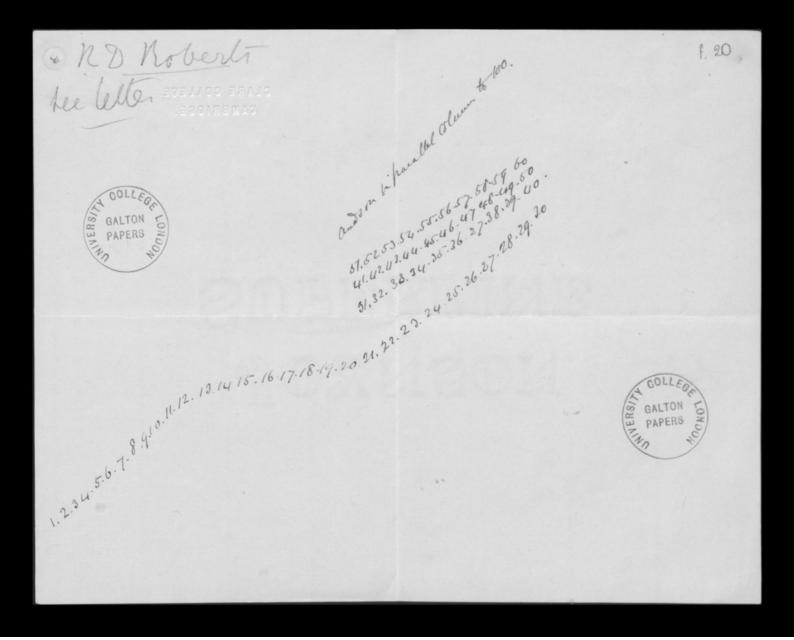
f. 16v molthough the part between Band 20. while the Blank Shedow of my body to throws apon the unecals up tobary The Effectio much as y a bull's See landen tohen Larned upon them from behud we Up to 30 the numeral follow m and there - - curved line. There being a cause to the regulat 12 and to the left at 20: Beyond 3.0. the poups \$10 dife \$100 are arranged in parallel

f. 17r GALTON PAPERS lines, as udreated in the drapan. Juaddery up alolum gfique, (which to always an orhoome tack true) Say. 7. 5, 3. 6 Ac, my mental Eye turveys the lines offices and Island by looking, as twee, at 7, then Jadab, Dappear today to myself 12, asken my mental Se ushally glances at 12 . Sthen add 3. and my Eye move on to 15 and loon. up to So dreem tobe turing myle more and more to the Right, beyond So, Ifund my glance farmy Rapidly to the left and Shepin afresh hory

F. 17V the right from 31 to 40, then the dash verene to the left is left ate Hafrech Start made right wards from 41, and to on \$ 100. I daw dealing to the hundreds 100, 200, Soo re. they are arranged in the same ader as the auto bal Stem to be alongway off, outer horizon, Kalinos beyond the reach gmy mental bision. Hunter Fachfull Touro R. D- Roberts Edectures under the docal declare. & Cheme J F. Galton Logg PAPERS

R.D. Noberts f. 181 A COLLEGE GALTON G May 11 1880 PAPERS Deartai Shave been trying to levery 10th your request to make a Hawing gruy hunches - force, but I can't Daw the backbel, and to the case the feature are To suple ouglight thate. that it would used an artest to ucake any they gralegil. She arely a white back from lite afreat spread cheet / paper. but thave the terre that & shelehe, away pour

F. 18V My feet like awast Sha flandscape, with the Jack That ow a the heaver hunders fradually parany about 12 or 12 la to fule light. repret much that I Canol do were; if there are any farthe particulars I can proje Ishale toleren In Javour & to bo. Muan', Jean Su' Augrouro A. D. hobert " f. Gallon Logre



Several C. Moberlan F 21r 2ª Murch 1886 GALTON 86 GREAT KING STREET. EDINBURGH. 2772617C Den Si I enclose Perfections Ellects and wer to the hate I wrote asking kein if I had gener for a army address and g he could give me the address of The & ferre

f. 211 Jeffrey le met at Villoth - He affress to theshe that the address I guve for and the light one and that from Some unaccountable Capita De felfrey day hot with to repeat

1. 225 to you what he certoinf Sand to the profestor V have your looked into the glatgow Desecting and copy per it the addreeded of how other Clergymen of the have Jufpry The New Junes Jappeg h.A.

F 221 hestbourne Albert Nork Vollokshields-The Keod R.T. Jeffrey North Adelphi Hours buter crack Dennettours Jour very that A. Cumpham Wibertim GALTON PAPERS

f. 23 Major General A. C. Robertson.

F. 245 Sunday 29" Filmary 1980 A COLLEG 86 GREAT KING STREET. EDINBURGH. GALTON PAPERS Dear des I shall land for Surge Selferez's letter to my france professor Ellet and let for Unow what he dagt foully there may la Julion Strong

F. 24V in flatfore. The addred I heat four I took from The develop at wourd hat gener me by professor Eller I am very long hat it has proved the acconcer but V

F. 25r Lope Perfection Eller unde he able to give fou the correct address your furthfully A. Cumphan Wichertren Junday 29 Jebruary -

F. 25V P.S I unche to the Edelow I the Spectator pointy but the misprent 2 Jour hume - Protot he did not not thank A unthe while to Correct of at any me who referred to hature would of courses des the two hand theres GALTON FAPERS

J- Utry goe with quind Choberton PAPERS benniston Slarger Juby 28 1880 GALTON PAPERS for, Then mut be ame mistake on the parts g Manungham Alerta a regand to the paragraph " the Operator, Sem and through Share not been of) that day does not sefer to me 2 amproy

F. 26V any me tan my able to help since me moler of which for unle me Jan Jun Jackfully Sung JAmy James Jalla Sag

C. S. Clack F. 11 A COLLER Wheeley's Road, SE GALTON Birmingham. PAPERS 2 72 7 2 6 18 0 18th Nov., 1879. Dean Sis, In addition to the enclosed answers to your suctions, I may say that I have a fairly good topographical memory, which amounts to saying that I readily visualize streets & places in their proper relative positions. Before coming to reside in Birmingham 4 years ago, I was lecturing for the Palestine Exploration Fund. 700 or 800 times I stood before an andience & described the survey of Calestine & Captain Trancis excavation work at ferusalem. I had never been to Palestine, but most people who heard me thought that I had . Frequently at dinner or supper I met with gentlemen who had been in ferusalem, &

talked with them about the streets, The gates, the hills, valleys & pools - which I saw ynead before me at in a map. When I first began lecturing I took but little notice of the complinents paid me by Those who moved votes of tranks; until & found that in town after town The dame features of my discourse were singled out for remark. One Thing commonly remarked upon was my familiarity with all The measurement, my acquaintance with the depth of every chaft, The length g every gallen, the place underground where every stone or object of antipuity was found. When my attention was thus called to the point I saw that my lecture did really five a great many measurements & distances in actual feet & inches. It- had not seemed to me wondergul, because it had not occasioned

f. 11

me trouble to remember Them; & it had not been dificill to The memory because I seemed 5 see it all.

F. 21

Diagrams were a great help to me in lecturing. I used to talk for an hour I a hay without a single note, the diagrams suggesting localities & what related to them. But once when I lost my diagrams on the railway & had to take boat at Greenock before they could be recovered, I lectured at Camp. belton without them - for an hour & a half, without stambling - being able to visualize the diagrams, The word topic heminds us how the Greek dators made use of tribualising to aid the evenory in their publie addresses.

As a preacher, I use notes; but an anecdote, or a bit of description relating to localities, sets me quite free from my manuscript.

Next to that, my chief and to remain brance is logical connection. As Something was said the other night-about the visual illusions of Nicolai & Swedenborg (See Si B. Brodie's Psychological Studies) I may mention that a peutleman & Ruew, a Spiritualist who died not long ago, used to assure me that spirits of departed persons stopped him in the street & held conversation with him, Visions, Suppose, are waking dreams. Watching my own dreams of think I find that it is the å visual memory which is chiefly george alive, & that seeing is believing to the sleeping person as well as to the waking person. you will probably not fuid anything in this letter to make it seem desirable to publish my name, else you are welcomes to do so. I am, Dear Jin, Yours fait fully George St. Clair Francis Salton Sug.

PALESTINE EXPLORATION FUND.

Nov- S. PI Clair

f. 31

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| P A ME South 3 | | |
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| 33 | ** | ment Marshall Des |
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| 39 | South Parade | W. G. Joy (Mayor). |
| | West-st. Schoolrm. | |
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| | | Rev. J. H. Stanning. |
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| Lincoln | Corn Exchange | J. Ruston (Mayor). |
| 33 | 17 | C. L. Hughes (Mayor). |
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| n statistical and a statistical and | | J. A. Picton, F.S.A. |
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| | Preso, Onuren | Mr. Edwards. |
| ** | Richmond Chapel | mir, and war do. |
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| Llanelly | Park Congl. Chapel | H. J. Howell, Esq. |
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| | Church | Henry Richard, M.P. |
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| | Grove-street | H. Keen, Esq. |
| | Camden-rd. Chapel | Rev. A. Raleigh, D.D. |
| 31 | Canonbury, Hare-ct. | Rev. J. Eustace Giles. |
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| | Clapham, Grafton- | G. F. White, Esq. |
| | square | G. F. White, Log. |
| n shaladada | Dalston, Queen's | Rev. W. Miall. |
| | Road | Rev. w. Bhan. |
| n | Dulwich (West) | Rev. Thos. Stephenson. |
| | Congl. Church | Rev. W. Isaac. |
| a la de la de la de la de | Ealing, Congl. Ch. | Rev. Charles Room. |
| ** | Finchley, East-end North-end | Rev. T. Bill. |
| ** | n North-end | Rev. T. Hill. |
| 55 | 1) 1) 1) | |
| " | Forest Hill Congl. | T. Rogers Smith, Esq. |
| | School-room | |
| -11 - 4 | Hackney, St. Tho- | Rev. J. A. Picton, M.A. |
| | mas'-square | active of any a record, parate |
| | Hammersmith, | Rev R. Macbeth. |
| | Broadway | LUY IL. MACOCAL |

TOWN. London

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LECTURE-ROOM. Hampstead, Presb. Church 33

Congl, Highgate, Church Hinde-st., Wesleyan School-room .. Holloway (Upper) Chapel Holloway, Warlters Rd. School-room Islington, Salters' Hall Chapel .. Union Islington,

Chapel Bed-John-street, ford-row Edg-John-street, ware road Mid-Kingsland,

Church

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| for garafland) and | Southwark, Maze | Middle Lake Contraction State State State |
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| and the spatia sections. | Stockwell Congl. Ch. | Rev. Dr. Thomas. |
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| Prairie . | road Chapel | A. Gliddon, Esq. (advertised.) |
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| 17 | Westminster Chapel | Rev. Samuel Martin. |
| y with | Town Hall | Rev. W. Lindley. |
| L uth | | Rev. W. H. Chapman (Rector). |
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| and the second se | Town Hall | Alderman Wright. |
| ". Maidstone | King-street Church | Rev. H. H. Dobney. |
| 35.11 | Literary Institute | Captain Copperthwaite. |
| W-lana | Concert Room | Edward Chance, Esq. |
| 76 | Cavendish Ch. School | |
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| and the second second | enormon-road | Avev. o. A. Maccadyca, Marta |
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| " stratt | Catora toda | Richard Johnson, Esq. |
| Manager Manager and Alaska his | "St. Saviour's School | Rev. W. F. Birch. |
| and the property of the | Rusholme Road | A. Borrodale, Esq. |
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| to here they we are | | 25 22 25 A |
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| Mansfield | Town Hall | Joseph Paget, Esq. |
| March | Independent Chapel | Robert Dawbarn, Esq. |
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| All Andrews Market States and All | Congregational Chpl. | |
| ,, Market Harborough | The Institute | Rev. J. E. Stocks (Vicar). |
| Market Weighton | Zion Chapel | Rev. J. H. Teesdale. |
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| mason ough | Andependent Chapol | Augerman Ouest. |

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| Merthyr | High-street Chapel | Harris, Esq. |
| Middlesborough | Odd Fellows' Hall | Rev. James Chadburn. |
| 33 | Town Hall | Rev. V. H. Moyle. |
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| an again | Church | J. Collingwood Bruce, LL.D. |
| | West Clayton street | v. coningwood brace, nn.p. |
| ** | | TT. 1.1. |
| | Congl. Chapel | Thomas Hodgkin. |
| 39 | Friends' Meeting | |
| Nonestly and T | House | Holmes, Esq. |
| | eGuildhall | John Williams (Mayor). |
| Newport (Mon.) | Commercial - street | |
| | Chapel | T. Benyon (Mayor). |
| " | 13 | William Graham, Esq. |
| Normanby | National School | Rev. V. H. Moyle. |
| Northallerton | Zion Congl. Chapel | Rev.T.W.Mercer, M.A.(Vcr.) |
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| 99 | Town Hall | H. Marshall (Mayor). |
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| in andered at | | , , , , , , , , , , , , , , , , , , , |
| Nottingham | Mansfie'd-rd.Chapel | A. J. Mundella, E-q., M.P. |
| | Castle-gateChapel | W. Foster (Mayor). |
| Oldham | King-street Chapel | |
| ······ | | Shipley, Esq. |
| n Outrand | 17 17 | Rev. R. H. Bayly. |
| Oxford | Town Hall | Rev. E. Hatch, M.A., Vice- |
| | | Principal St. Mary's Hall. |
| | 39 | Dr. Acland, F.R.S. |
| | | George Metcalfe, Esq. |
| | Free Library Hall | |
| | Free Church | Rev. H. Carmichael. |
| | Congregational Ch. | Rev. W. H. Bassett. |
| Pershore | Broad-street Chapel | Rev. J. W. Ashworth. |
| Perth | Free West Church | Rev. J. Laidlaw, M.A. |
| Plymouth | Mechanics' Institute | John Kelly (Mayor). |
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| Portsea | Beneficial Soc, Hall | Admiral Sir Jas. Hope, K.C.B. |
| Preston | Fishergate Chapel | J. F. Leese, J.P. |
| | Corn Exchange | Miles Myres (Mayor). |
| -11 | com Exchange | rance radice (randon). |

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| TOWN. | LECTURE-HOOM. | CRAIRMAN. |
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| Ramsgate | Cavendish Chapel | Rev. B. C. Etheridge. |
| " | n | Rev. H. J. Bevis. |
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| | 59 | G. T. Kemp, Esq. |
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| Romsey | Town Hall | Rev. E. L. Berthou (Vicar) |
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| Rothesay | Victoria Hall | Provost Macbeth. |
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| Rusholme | Public Hall | E. Wilde, Esq. |
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| " | 37 | Rev. T. Aston Binns. |
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| Selkirk | First U. P. Church | Dr. Anderson (Provost). |
| Sheffield | Mount Zion Chapel | Rev. D. Loxton. |
| ., | n I | T. Moore (Mayor). |
| Shields (North) | Howard-streetChapel | |
| " | Congregational Chl. | H. R. Proctor, Esq." |
| Shields (South) | Barrington-st. Chapel | AND CONTRACTOR OF A CONTRACTOR OF |
| " | Wesleyan Chapel | A. Stevenson, Esq. |
| Shrewsbury | | Edward Parry (Mayor). |
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| Skipton | | |
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| 55 | Cong. School-room | Alderman S. Boothroyd. |
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| SI TT L | | Thomas Harrison, Esq. |
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| Wakefield | Music Saloon | Henry Lee (Mayor). |
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| Wallingford | Town Hall | H. Hawkins (Ex-Mayor). |
| mannyjone | TOWN TIME IT IT | Wm. Franklyn (Mayor). |
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| Watsatt | Westey Soudontoom | Thomas Checkley, F.G.S. |
| "" The main adam | Wycliffe Hall | John Crosfield, Esq. |
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| 11 Damariak | Ebenezer Con. Schl. | Rev. H. Luckett. |
| West Bromwich | | Rev. W. Sayers. |
| Whitby | Iron Church | |
| 55 | 31 TT 11 | Rev.W.Keane, M.A. (Rector). T. F. I'Anson, M.D. |
| Whitehaven | Town Hall | |
| Wigan | King-street Chapel | Rev. W. Drew. |
| Wilmslow | Congregational Chl. | |
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| Wolverhampton | St. George's Hall | Rev. T. G. Horton. |
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| Wotton | Reading Room | W. J. Evelyn, Esq. |
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| Yarmouth | King-street Church | Rev. William Tritton. |
| Fork | Priory-street Chapel | Dr. Kitching. |
| | Mms. of Phil. Soc | Rev. Canon Hay. |
| 1 | | A COLLED |
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GALTON PAPERS

LONDO

NER8)

f. 9r 4 Vie J. Jaolo, Furence, feb. 21 1880. APERS my dear Sis I enclose my replies to the formulary of questions which you kindly sent-me. I have written them on a separate theet, from which you will be able to fill the blank spaces in the formulary, according to the aim you have in view , I confin har I found it ralace difficult to five cract autorers to many of these sultions, and I doubt whether I have succeeded in long case . Weaer - homotion the on the one of the motion which you will receive, Will, no doubt, contain very valuable materials, as well as further suggestions on the mode of putting questions is order to arrive at the breth . It seems

to me har more definite questions hould have been easies to answer, and given a better enaberial for comparison For instance questions tits there : When you wish to remember a have, do you remember the sound, or do you visualije it, as written . When you Woushipe persons of your acquaintance, can you alway, temember Hether they wear monstacke, beard etc. or not? The color of Their eyes, hair cte? The exact shape of their nose ! When you remember a tune, do you feverally remember it in the exact better same Key, in which it was written ,

F. 91

(Is in which you heard it sang or played)?

I hopeyon will chence my venturing any opinion and encreaching upon your true, in a Subject on which you have much more experience have I, and believe me

Very faitefully yours

P. Gsen ladie .

f. 10

As The other copy of the Circular of deposited in the Circolo filologico here, where it may perhaps serve to some purpose



hy den in the set of the Jan. 19. 1980. Burn Oslen Sacken f. 11r 100 My dear sir, your article in Nature , Jun 15 has induced me to put on paper some of my mental peculiarchies, which may be of interest to you . It is extraordinary that the field of thearer your are cultivating has been entirely neglected until now, and you will certainly reap a tel harvest in a very short Time . about myself I will say that I was barn in It. Petersburgh, Russia, and have been for many years Scerelary M Legation and formal general of Russia in the United States . as an amateur

F. 111 I have done some work in ento. mology. at present, I tive in retirement Muy truly yours P. Peren Jacken GALTON PAPERS

f. 12r CL. CL. In some R. Shute GALTON LONUS Oefred. Deer Sir. I have to thank you for the esticle i nature which has ofened ng eges un conidently to the extreme disergence of the nethods en. - flyed by puple in the same stage of mietz, a disciple thick sans to ne to require much putter anyrs and uplanation, that the task would

be a difficult and dubtful me, is in most cares the data for it could be intrucedly lost. I have that your collection of fact, may walle you to hit upon some clue, for meh a vide difference seens at french church is strage a thousand a 'f as adduly dimovered that ferfle and as were wing most of the works comments is all att vide difference (Thick I repert is i fact to one extent the, but not searly to so wide a deput

freid hir Dodyson letter kunn ti fere en Livis Carroll (autter of chu i bandwhend etc) but who is in his ununty expands an erthusiatu ad ripial nattenctician, is much struch by reading your article, and told re that he had attented some unstighting whe save line hinself but had sever hid the or fenerence to carry the far. I'm shat he told ne I mayne that he has fot his extension is this notter anyt in definite for al) thick that a person with so nerted a fermality ad

hel an eneral type of atetter ad inequation could be a good subject for analysis. I know that if you wolk und se ne of your fifters of media for him he could glady fill it up ; and I thank the report night atust you. I have het, I reput & say, for for in the properical experients my - justed by gen other paper, but files ited to do so the I get spare the , at a mind sufficiently pre from strain to h of the die clasticity. min. Jus

1. 1. CL. CL. L. Stant of the state of the s Rechand Shute F. 141 titte 9 er June June 1 Bylite St. P. S. BAPERS UN my dew Sur. I was the more interested with your paufillet on Generic mayes in that having seen zour article last year in netwe on conforte portraits I have ever mice used the description of the process at the aftest and best illustration of what I hold to be notice's netter of forming querel actions is our minds. I an aly not juite artain Retter your denstration of the quality of the refrescatchion of the different 5/es is a conflicte are. It sum to se at first right aly to from their the contribution to the amount of the or colour would be equal in each case, not that she fuers

or definition of orthing would not cout for metting is juring one fere quester night than custer is the conforte result. This booker is finte inmatind to the gueral theory and if different faces have different degrees of weight the fullity the analogy between the forrers and that of the formation of a queric idea is only the noi close. I have also read inthe great aterest the peoplet on Psychonetry which vis entirely no provid to re El I red your article in the minteult buting last sping. I have attempted as conflicted in I culd to anser the pertions is your would Shiel I return to you . I fear have that my ensues will be of mill value as I an under the infunia that querely my inege-naking. or refro-. ducing four is malle than that of most other people;

To that the differences shill I find or attempt to find under the different backs must all be considered as fitched is any low gamet, and to be less chocheted thay ferlight not relating than the of others. This will I think be so far is shifted of your theory that are is included to track on general shat are Asserves is another for my on tinght is of a most distantly algebraic " character. Though my ford of Art and vith a teste shiel has been sultareted a far a te viticel fault i covered by femilier aguain . - tense for namy year with all the part fellents of Sunfe, it is will the questert difficulty bear I can will a dim idea of the colour, details, or an perent effect, of any ficture harver well I may know it, (rad Hald Julif og hour often I hve sen it). to too I have to minical surgetting) have a peu delight is mine at the monent of Leaving it. On the other hand I have an enusually good

verbel menon; can refact sneeds of party even shen I have not seen for your the books for she they come and have not feid speciel attalia to the she I find read the of me reading a look I call mally per a fair committee on to it's cutute and their order. I reading froze hour I notice that I read really retter by sultices than by words, ro that I a not at all youk at wating few. lianties of form and spelling. This has durys her a hindrance to my becoming an accumte and exact scholer, while I fame that I am yeaker them most people at estability the same of a firsyl. The details book fealfully equite ht I fang they are the kind of this zon went. I have in the Verstin she I have more the to my some of the Psychaetre Experients as the results

Rev. J. D.W. Simon . f. 16r Spring Hide College A COLLER GALTON LOND PAPERS Arnughan Dec. 9. 1879 Mydeardin I am sorry I have not been able to get all the papers pled of but you all receive today another instalment & if putter ones come in your hall have them. You will be surprise) prhaps at my own autwess. but the fast is I do seen the quite mable to picture thing, as distinguished from going over them in memory -

F. 16V

two things which seen true nery destruct. By effort I can recall the positions of the books in my library if they are arranged according to subject ; but though I could tell any one where a parhular book was or fetch it myself in the dak I could not put the book or the collection of surrouting books to myself. The mage of a book may come of theth occasimally, but this is not mides my control. all Scan generally get by effort is something which corresponds I fairey very closely to the Schema of

which Kant speaks in his "Kritik :- a sort of indeterminate, form vord of content. I am not sure that persons do not Ametimes conformed these two things. The power of visualizing or revour in ideational form sevens inpressions, with a without the effects of real sensury impressions, is one that may of course he cultivated & depends too prhaps in general nerons endetions Jam, my dea Si Gnus futtipilly D. W. Smin F. Falton Sy.

GALTON FF 181 m 2726180 Spring the College Bronughau Feb. Eg. 1880 Mydear Si, Ihave read your paper of which you kindly sent me a copy, with great interest. You are cominly bruging to light a number of nery currons phenomena in the institution and action of mind: - very . eurous indeed . I wish I could have sent you more answers to your questions: but somehow The remance young men secured returnet to take the monthle dr.

f. 181 to reveal themselves so far. There is a certain untration theness I fear in the answers which most persons give. The power of observing correctly aball, much sure of l processes unetly is a very rare one. Even folomon secured to that this when he described a wise man as having his eyes in his head in contrast to the foll shore lygo are in The ends the carta. have lowed recently that sometimes mayes offaces or other objects present

f. 14 Thenselves torne of heuxelves Anddenly with surprising dis huites The mention of a name will recall prons what may effect of mane, when I should be unable to recall them wohntruly hovever earnestly stated. Perhaps this is due to the fact that I have for many years encernice my past chiefly in retation to what might be called abebouchous ". e. ideas, philosophical . theological I shall watch white engeness for the results which ssue from gar luquines. Z Salling you faithfully WJuna

Simpson Mehose, mass. U.S. H. Nov. 28th, 1881. Dear Sir. Tou may remember to have last spring answered a letter of mine in regard to mental imagery, for which you have my thanks. One thing I amitted to ask .- You mentroned, I believe, in one of those articles, (it might have been in Mr. Bain's criticism in "Mind that I saw the reference) that certain drugs are in some degree favorable to the exercise of the power of imagery. De so kind as to let me know of them, their efficiency, and whether they can be taken in Homoeopathic doses. I have at present no pouse of imaging colos. or light & chade. It may require a more delicate organization than mine, but I want to do what Respiting Yours. Chat J. Simpson b can. Mr. Francis Galton, F. R. S.

Telder F. 10 A COLLEG GALTON 1880 { Jan16 } PAPERS 2 My deardir, allow me to mank you for store the copy of Mature containing your fust contribution on voualized numerals. To me the article contains some astounding revelations and it seems, in my humble

opinion, mat your investigations must make a new debarture in mental research Iremain

f. 1v

my deardir

Faithfullyyours

Henry Ro Tedder

Francisg alton Em

R. C. Temple f. 21 GALTON PAPEDO Mig por 0 PAPERS NO 13 har 1880. myleactin The last humber (lung) Man Antecopological Joural has come theaco with your paper di Vicealized humerals - Mha interested he externel be cause with hve Midder I visualise ht on france and Strutt but "svery tring" have done so a long a gran remember, & with regard to dals, weath in may own life shi Shore or len conscients

as an aid to meniony. hust therefore you will Excuse my addiency gon with subject. with he neulal inages are Ever present -Man't thuck of any Event, auplison / Kusin or unkusul) any book, any infect without the uccutal mage street upin my hund regarding it being have a len concern present hepre my mental Egg. For nis ance gruself & mandde unce reading you paper have a distant "place" in any hand though I have not slea Eller Jan o Skur from Aplience hattuplace for nor orcupy will be hearing by you asquer a have orcasion &

thuck of you. This power 3r of insualisation is not to stray as it used tobe for the reason hatney hund is keich more pilly orcupied teac formedy! I how hold an fice conthing 7 judacal . aministrative muclions as is 20 Men to case out here a consequent for heavy hours in having I bound down to haw plactual work in oiling tu meet of life for Her 22000 people wer alion Sule". Jalso always occupied with are or use puper p scientific journal to teat they have been little time for Reaming "hit so sting is the halit with we that wery linke moment I may vary withent

spageeation is fiven up & neutal pictures ublath at The leaves I give thing tather breakfast r at needs seedeal applied timesky wife els me I am Men ridicular abeut-hunder there hadigal at there. Attu line furth Lovever hig mental picture leave we + may mind's Ege Les ho longer. And hurring my non case the first thing that stuck me about got a paper teat its scope as. a pluyedogral investigation nas not nide rugh & with gan permision I peopore as some as I can pride time to lay as much of ster as I can before you under the more Jucial title 06

2 RC Temple F.4r "Pluyidogical Hallacuaten - a des cuption puy min case" I borrow the title from D= Hack Tukes' remarker & you paper Inill address their to you & hat give you percensed One it as you please - Either tim compate il intany piture in vertigation you may make or to publish it is it stands. Another point I hard New you allentin to -Sam I know someting latter Vaghe in my conversation & pequent stop in relating a stay or explaining a pout a then take it up again after a shall pause

- Mu Cause often I acc mae or len conscianspequeut calet negel, alien ten storque or Au speaking raquely picture - Training in very nim Either Marfectury und will produce de lle speake hearen a following Some & bye-thread often stay - + sometimes from hewoushes atising fronthe conscionen of my defect-This out occurs when I am in nominary conversation or relating any thing which in soniely abich & herr the frovalue - I hever do so in Court + or in Committe

or where un polant herice, full occupying my hund is an haced - hould dust realta ulite Engrung. from those fyour acquantice Who way have a Kunla pecularity / tugare of utor fa inida cause for it? the Pechaps come standing stanne from the same Cause - . hitte regard to zon here tell : you argunent. derived from the frictures sent yon in The Seloning is I not - The Euchean hStation is decimal suply whereas the notice

clature i megular o complicated theregh un to a being Reatizat Alle "picture " show ture cult Manifaul nind allemptic toreconcile r learn) the two, I.C., where weater orcur in the uncerelature autotens occur in der "picture." The hatus of hidig are as well all hear highly maximative ana lace + I have no doutthaterer that Viendersty Exist large and hear + bad as our septem of numeral housen clatere in their in Watter India unde unse. Then they make

R.C. Temple 3 6r up to a hundred - x beareds The have been to halt - derh (s?) heaning 12 + hazar (12) 1000 - they lay derh hazar (1.P. 12 hearsan) n 1500 - again Jawa (A meaning 14 + Jan () 100 they say Jawa sac (le. 14 hundred pr 125 Similary adhair (3) nealing 22 - latch (20) 100,000 They say adhai like fe (or 22 hundred hater air) m 250,000 to on the been confusing Extent. In the hext place la reducate hattve of Nathen hudea learno 3 distant et Kinds

Instation - The Persean Marindi padriacy use as orcasin access r The Ragnes (EI) pr denoting hearing + with a Slight head of caten for denting weight + hucesure. The pist too are laught in Early life - the later later the Therefore if your hear is could the fuester to he decided in Lidia is -How dog nonenclature in hedia affect Visicalesction + dog tander in aluch Mandaten is laught affect the visitalerater Granting your then the Indian picture should

Mary avoiderall from the European me - Shave used the Presence dearantes abore because in case you are adpressed aquande utto any Indean language your theflo- hedian preas can sail explain buy meaning. Thave unde abequint maids con the rivertigation alove & undicated - hit , the Mindly making Na hating under and alust reacheluing. that I have leaved for you hen sheristadar (Click of the Court I state that he Lees

Tu Persean parts us a live frairight to left, ht the up to 10 all - then 10 987654321 1. galyonmrl the Andi pines from refat to left left to replet tung 2 3 8 2 5 0 2 5 90 1 2 3 4 5 6 7 8 9 10 he does hot we reghes Atte Anidi figues are belan The Persean die as often were a block " - Their is an Endent reference & the lity grutaught - Persean fines area taught uplet theft - Hindi pines as thes. Re leant the Versean pist. PAPERS

hy Saftari (Mice Cleck) states he sees the raques in lines of 10 - teat 11 is under 1, 21 under 11 + 20 M - tus is a reference En also sees trem right to left turs 2 kupes /kuper + Loan 12 Rupes 11 Hupes (m) 25 es 22 Rupes 21 Rups es es Sont you think the requiry hath persecuting? Shall h happy thelp you GALTON PAPERS

he have point - I do cot Know whether my fracts of neucling " hereditag or ust, but nig potter Sa Richard Temple, Part The Nash, Wacester, ulu was price Poreun of Mubry, all pedall. five you any information Gon to The Thank - + way onthe H. m. leupleg Political assistant, Hydericked Deccan, India - would proball also help you in ausweing presters Septenday address astacy y curs mater very long letter dan

four sunf Rauple PR.G.S. M.R.A.S. Etc. 2 Faucis Fallow Eg P.R.S. addies R.C. Temple Ly Cantonned heapitete Firozpeur, Pacijah hidia. GALTON PAPERS

Wig Thomas n Gt. Castle St. COLLEG Regent Circus. Jan. 28 1/880. my dear Su; I have read with quat interest your recent askile in "nature" when visual. iting minerals, and I think I can collect a few sets of answer expecially from amer. icans which will De of interest to you Will you kindly

11 forward me some of your blank formes of questions? Jes. truly Mm. G. Thompson_ (at the College of Physicians & Surgeons, new York.) GOLLEGE LUNUL J. Gallon Geg. A. M.S.

A COLLEG F. 12r Tonks GALTON C 26190 Parkwood Grange. Knowle. Warwickshire no 207819 Dear Si I think we were old school, llong at the Gramman school, which I entered al 10 grs der in 1834, it was then held in the Shakespenn Rooms, and I have some fint recollection that previously you une at another school with me kept be a me Stilleman, but y This I am not quite chen, i is , you left this school for

the other some gears before men; I had scarcy tay that if bunnes or pleasure brings you with This part the world I shak be very hetty to be your hort of we might refresh our memories of Ad termes you hape my much intuested me , for some times I had been any withher to on is iturt ate With kind, reguls Better we Jour Trues Edmined Junks I 2an ai gulin Ez

yours truly Edmand Jonk 13. C.L

house, Mr. Edmund Tonks has taken a part in public life that no chronicler can fail to mention, as more than one of his trusts have been filled with signal success. He was during the building of the Birmingham and Midland Counties Sanstorium chairman of its Committee, which office he resigned when appointed by the Town Council a Member of the Sewage Inquiry Committee which produced the well-known report on the sewage of towns. Educational affairs and subjects of social progress have commanded his active a'tention, in more directions than one. The Birmingham Natural History Society chose him on two occasions for their president, last year he was president of the Midland Union of Natural History Societies, and twice he held a similar official position for the Birmingham Library. He is a member of the councils of the Midland Institute, of the Birmingham Chamber of Commerce, and of the Committees of the School of Art and Multifarious and exacting as these posi-Free Libraries.

Tonts



f. 13v

SUCH being the case I am not surprised to learn that the President may re-convene Congress in October.

ONE hundred and fifty millions sterling and 300,000 lives were the costs of the Turkish War to Russia up to January, 1879. And all this awful waste and destruction of human life was carried on in the name of humanity, progress, civilisation, and a special Christianity !

THE Russians pretend that there are too many Jews in Lithuania, that they can't keep themselves, and that Russia is not inclined to feed them. So she is about to despatch them to agricultural colonies in districts where similar Hebrew land associations are said to have presented. Of



f. 1 Jenn gale A COLLEG 15 Burligton Place Eastbourne GALTON 15.11. 79 my dear W. Jalto I Endre yn en answers, which I fear are scrappy. But I shall be delighted to enlage in any direction for like. about machines my care is, I cupper, pearline. I am full of ideas about them, but an to inddent to work out what I have often pictured in throught. E.g. I worked out years ago, When sume enjaged on Parlaability, a machine for recording automatically, & seconding, the throw of a coin. It was to some the trouble of Doing this with large consect, but & course without trial one can't say what difficulties in super of friction or tigidity of the parts might arise. What I have still in the white. I each part that was needed in the white. Likewise I have fit the iden, very vividg vieneliged, of a puggle-box which Lone Day when I have a latte again in my hand. I surg put into life. Sr ky but

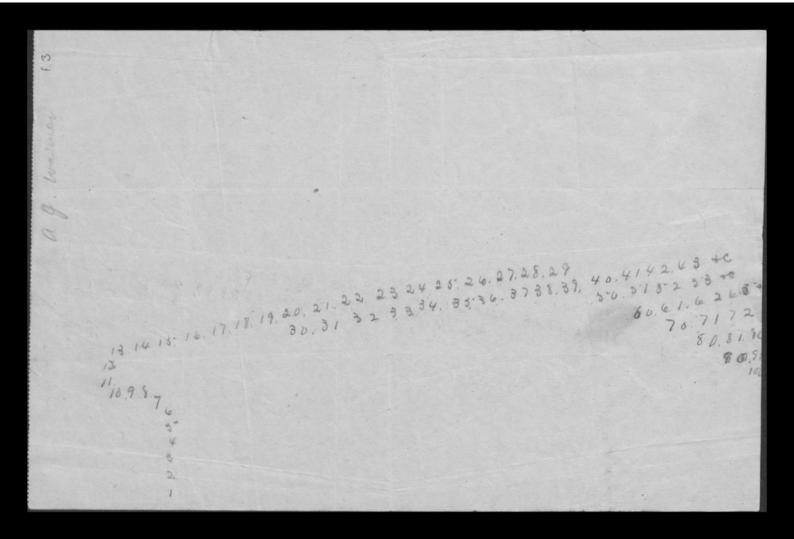
Ga J. warner Gouse of Representationes,

Washington, D. C., April 11 the , 1880.

Editor Nature,

After reading the description as given by Mr Gallow, in Nature, of Visualized Numerals, 2 gnestioned two of my daughters, who were present, as to Their comprehension of numerals, or the way monuters appear to theme. The younger, somie, a girl of fifteen, munediately explained, describing with her finger in the air, The way the numbers stord arranged in her mind or as her mind saw them. On fring asked to write them down as they appeared, she took a pencil and wrote the numbers in the form and order here given (see enclosed). From (e upward the numbers meline to the left to 11, then go up to 13, and then off to the right; to 29. Then 30 comes tack under 20, and the numbers flow off to the rightagain to 49, with a little space between 39 and 40. Then 60 comes back mder or and so on appearing in division of ten. Above of the numbers tegins to grow dive to her. 13 always appears in the place given it to the leftof a line of Figures running to the right and nichning upward, If she idda two mulers, as 14 and 17 the

a . J. Warney Gouse of Representatives, Washington, D. C., 1880. result is put, at once in her mind, in the place of 31. It one of the larger numbers is combined with a smallit one, as 23 and 3, only 23 is referred to its place and The figure 5 put mides it, and the result carried to the place 20 holds, or if multiplied, to the place of the member representing the product. Numbers or figures, to her are devoid of color, It is attention had not ver Fren called to two preulianty & efore. A. J. Warney



addun. f.41 Timh Wel. Charles Warren . R. 10. 2. 01 Brutta Banach. Mattern 1 Dear Sir. I have been making some shurching letil as to the oblin of sounds " in the mind of children and will make a for sumark or to my Arration in can they should be of my use to you is your varion afrainiets. In the fund place I find that all Jours appen the huger the children munich (which have been alter which of having during & painting) & chas -Rus the sound of the word time raise is with several, red with stal blue turin ctions. Jaking for children & various ages - I have tied would one of one

again at intervals of time a to early F. 4V child the word has the same when, form and gund alfren and, cal The Knyp the gund what a figure "de for ant can't child. I find that some words have ally At sam Aheaam t carl child which some differ both in when a shipe I pursuing the subject it clours appress that is some way the Alter in pluser the words - though for some particula word of which it is a hading fature , a vier ouse I cannot at purch a antiam. For example I find that to the minds of all I have whend -A letter R when sound ad gives a red definition y while

5 and she give a blue grag - this 50 that will a comment for "Tain" affring ud with a blue termination. he I find that gillow stands for sond letters in deffench mind. The children suy that They su defund shades & when for wy must hel un worth to describe Them. many words such as fact " Hection " " April " system " han definite from as well as whom. Hing Anwation which of ing on to you I shale h my hoppy to put you in forman of this - a on the Ater hand of you can give m

f. 5v any hints as to how the subject can be former with actuatap. I shale h much Shiged. Ving tail gruns Charles Warren Francis Salta in 3 COLLEGE GALTON PAPERS

Chattan. Scoul Col C. f. 6r 20. 21. 1.1.051 A COLLEG GALTON PAPERS leur die . I will undearm to Main the information on the color of hours is you suggest. I find the field is grining langer the Souticipated. In waruph it appears that ent voice has a color a that which for ados all its Immes - I kun a juil of 14, tilus my voice to a dup home paul; her mothers to the after your of a sumset the gringer sister' to a flicking fin a her ynnyn hetter to the

difith of the sea. Jaking a bruch of artificial wall flows which have metures I know and yellow in griat variety - the udpendent Arevations have field my bour as a reddish brown : W The has a slight deformer or to the truch . I find that if I make my voia gruff it muts black and if I raise it in a high note it sounds yellow-This is such only the care with childre he who with adulto -Ha ceangle a lady laughed al to idia of a when the sound - but when I struck the

bow notes on a friand the said of comment it was guite natural they should list black and also the about 10 adulto I frisch and they all give in defendant frinnes that on the piano - the notes So from black, through brown to yellow & white . I cannot su that this Las anything to so with the books they may have fust lewent from . Ply anding the Santan with of the Judan, a party under I' londer goes with to male a Sugmometical. Juny used for the Valution Lephrature

Frans to with with Late some Jean - and will in clude all the writing from Damas cus to the Dear Sea. saster and to the Quert. I kink that much migh h done to the math of Palestin, in the Country of the Heltites. Ving that yours I COLLE Chall Carun. GALTON

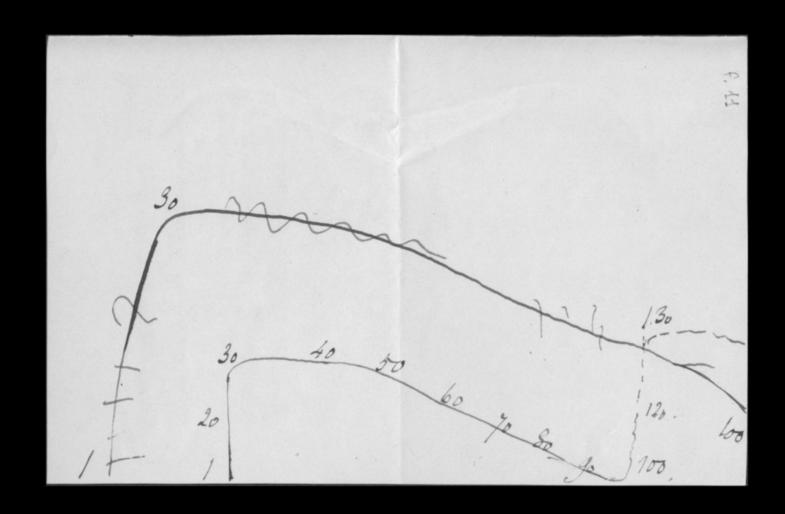
Sir David Wedderburn f. 8r Lunes more YESTER HADDINGTON 28th March 1890. Pin I write to you in consequence I reading an article in Nature" on Visualising numerals. To me the cardinal humbers always appear to be arranged a curve, with sudden bends at thirty, and at the hundreds. Whether I think of the humber as written in words, or in figues, they are invariably so arranged although the image is not how To vivid as in carly childhood.

. 81 Rie note requires ho cepty, Yours very faithfully David Woolderburn

(130 thirty thirty one -30 - 31. 32 - The high dred turity 20 three 32 F. 9

betorburn 15 Aav Meredith, A COLLEGE Gloucester. SHALTON PAPERS 10 the April 180 Dear Sir I think that the Curve of unnerals must have been associated in hy youthful mind with the years of human life, tising, as it does to thirty, then keeping hearly level for a lectain 7 distance, and inclining gradually downwards to me

hundred, after which it is herely a dimmer Eletiton of the Commencement. I should say that the arve is all dinly truthe When Ithink A runbers, but of course any humeral thought of is the most disting at any moment. They humand may be thought of in words or figures, their places only are definite fixed yours faithe Sir D.W. M.P.)



H-S. Willink f. 12r A COLLEGE 3 StudeBark Stut. W. GALTON T PAPERS 2 227/2/6/26 27. march. 1880 . Deathir morethan a month ago You sent to me, al - min Duckunth; request, a copy of your - Questions on Visualising John " allied faculties "-I have pleasure in Enclosing fire self of answers -The answer marked A are by a young lady (28), with a marked talent - for drawing: I an an altibuly to mention .

F. 121 her have -Those marked B. Which are shaller than I could have where are by a gentleman age about 28/2. It is Scarcely will while to give his name - but I can do n' of required -Those marked C are by a son of the Rev? John Hawtrey late of Cta . Ke is a schortmaster. name Seage Hawtrey - age I hould Say about 31 - musical.

f. 13r Those marked D are by a barriler, age alme 26. Does not draw on the does un-wich his have kunn unter you want it for reference to himself -Those marked E are my I onglot san that I am very ava - found of drawing -Neither his Hawtrey nor myself wish air manies hbe published ; if however you should want any for their harticulars from myself I shall always be

f. 13v most happy to do what I can -I may herbacks say that I take great interest in the subject of your inquiries : and if it would us the troubling you too much I should be much obliged if you w? let me know when any in next-article to "Nation" for I rarely see the baker FOOLLES you truly GALTON TO Agwillink

F. 14 I only found it possible at first by looking at a plain diagram of 64 squares - I bas afterwards able to play a little by unaquing the diagram of 64 Squares, but with both nearly the same success. In the one case I did not often forget that a square was occupied, in the other it would be pretty Sure to happen after about ten tr a dogen mores. 12. All these are fairly destruct: B. I can recal and incapine music The following fact is airions . they I hear music for the first time

Day at an opera, on coming 1.15 away I cannot hum ore with any accuracy the times which have taken my yancy; but too or three days afterwards I catche sugger? tune unconsciously, and on Thinking ore what the time can be and where I have heard it find that it is the time which I had previously tried in vain to recal. After this I can always recal it at will . 14. Has ust raced.

Groye S. Hawtrey.



C (comming H. G. Willink) March 1880 f. 16 ST. MICHAELS SCHOOL. 1. Kather dim - ho. 2. The part on which attaction is concentrated is bosh defined. GALTON COLLEGE GALTON CON 3. Fairly distruct 4 ho. 5. bittin the head. to. 6. not. Acadily . Fatique fell hi the forchead first above the Eggs. 7. Fairly distudty to to. 8. Scenery I recall for more Easily and distinctly than people. ges ges ifference between a gitte langing on a wak and a

10. Mumbers In my much Egg fo in a straight live water 20 when They turn of at sight angles as for as a hundred, being harted of more darkly at Every ten. The second hundred proceeds w Sta Jame way but with less distructuess. The vowels and one or two other letters in the alphabet an associated with colour. a is isd, & white, i black 0 gellow, a blue and & preen Thèse ideas I have had with the utwost distinctions from Earliest childhood ; they have hever varied in the least cless without looking at the board

£ 180 . W. Wilson Principial) GALTON Onthe Imer Constal Salace PAPERS 2 July 14. 10811 Jear In I am much interested in all you say about mental Imagery, and, I you will send The more papers of questions I mill get Them filled up by the students although f course there are not many of them als Could realize mich facto, to & mycly, aber Thele you that I often, when arranging Machines In my mindo eye, have two is the Atten young at me time and Can call if as it nece, any me is a partially finished states and continue the wink upon

that are to the eaclosing the thes, you well see that I have a strong perception ouch as you name, Juman leng truly yours le M. Milimo Frances Galton loge M. A. 42 Valland gets dondon

that with a gave day coverfundents preadly 9. w. wilson GALTON FON PAPERS Ochool of Bactical Engineering Crystal Palace - O'. Souts Power -Och. J. 1880. Dear for From reading over with much pleasure Gour Papoers upon "mental Imagory" &2 I am led to suggest that much to the development of your line of research in the direction of Anusic. In my own case my Profession has ever been from choice that of a curl & mechanical Engineer; but from early years I have constantly devoted my lesure time to the study of music of various kinds, but Redetical & Ractical: and I wenture to place on record for you , one or two facts in reference thereto, as regards my

£ 190

F. 19v

own case - Should they prone I any interest to you I shall he glad. I token I play a pièce of music from memory I do not do so in a merely mechanical manner I see clearly in my mind the music from which I am mentally playing: I really read off- the whole from the music again, and of I miss the continuity of the piece it is because go seen to have lost, as it were, a part of what is clearly present to me as a mental mage. (2) I also clearly see any wrongly printed notes, dirly marks, memoranda Ke, existing in the original copy; as also the position of each foart (as it Comes under my hand) on the page; the position of the "Jumoner" Ke de.

F. 201

(3) In extemport playing I do not "String together" chords passages, the : at Rephazand; hit I clearly see them in my mind, following one after another in regular order, and according to the rules of Harmony, Counterpont Ecosposition generally, which have formed my study from time to time: the originality of the piece being the result of the manner in which these are intuitively evolved from the uner musical conscions nest.

In composition, apart from Piano or organ, I merely write down the passages of music as they appear in my mind; and I find a difficulty in thus picturing to myself more than one musical image to the same words : e.g: in writing a Song;

when once I have done to I am always led to a mental view of the same music for the same words, or vice versa the two appearing meparally united.

Thay excuse me fir having troubled you with the above of my I am, yours tag O . W. Wilson June OR lice Principal

F. Galton Z. F. R. S. 42 Ruttend Gate . Nordon -



F. 201

F. 211 roodd Smith Bendir Brunch Bill Lodge, Hampstead Beath. N.W. Jan 20. 1880 Ihre very glad that my contribution should have any haterest progen -Should like the morpy the Statement in me point - as regards historie dates as the appring of the centuries preading the 19 - The gap behosen the two comes is It grate so depute a hay

F. 211 description would convey. & The sandan hundred belong I sother comer hearing a my 1720 Cil 200 1020 A L B

thought an going backford afrivand. I Even fo a little beyond he come in thinking forward . I Queen lightethe death & fame, I; aussin (1603) 4 ah A. Port James To Elyn as a show attanty by in in the 1600-162 the springhander plot (1005) i alway about B. Meen hugi ausin (1702) i alway i the 7700 - 1720 low Mangle William III: death Come the alany way date beyond The 3. you of the new antrony

F. 22V Come in the 0-20 line. Dona trimble to helandly the constant In faithfully Amodelment Shall be happy the up my particular gon hung card have GALTON PAPERS

Branch Still Lodge / ver Hampstead Heath N.W. Dentir your paper in Nature leads me to sind you a note of my own Seperience of Visualized Minden'. In my non case the similer follow This 200 te 12 120 A - A PAPERS ± 7. * · 70 100 170 200 above 200 it becomes Vaque, soon gets lost & secept that 999 i always in a corner like 99. The line a consee have no leasonable proportion to the monters they contain. My non position in legan to them is generally about * , hearly opposite my non age (50) than shifled in I have grown older; but sometimes varies extrem * + + - A1 + I alway stand with 1-7 a my left - but at * I can face

Ethe way towards 7-12 ~ ~ 12 - 20 ~ 20-70; but never "think" towards 7-12 ~ ~ 12 - 20 ~ 20-70; but never "think" towards 12-20, how do I sure stand beyond 70, skupt as & dates as I will septam precently. The ananyment is rigid that affected by my Elatine portion. Negative under have no place of their own, but are smaply positive are, with a negative sign. in thinking of depres of Futurenterts thermom; they follow the same line, but go down straight to " + go an , as though I when 100 : thing -- 40° being about at * I am not always conscions of the monthes themselves, I make no use of this arrangement In metatal anthrmelie where the own or quotient much secreds 200. But landreds stronsands follow the same lule as write - I think of a million

as a thinknow thomands. I Can dest described the impression by saying that it is an if the sumley were honses in a bent road with which I am familiar, of recognize them by their location , an I should 53 Regent Sheet, 190 Picenkilly te - In purely involuntary + I cannot associate it with anything , nor Umbrulen the time when it did hat best in my mind. I donn know file Seistence in any Elatine, but have there latters hind pain & highire In thinking of the date of the year Istarting fran 1880 Minin 1020 1700 1720 1812 1820 1800 1800 1700 1700 1800 1800 1870 1880 12 1670 1770 1800 1870 1880 The year follow the same sule as the humbers Com backward) to 1720 - but then go shaight to 1700, x Some ater postcations Contarios - there is a blank

between that the next corner where togg is ,000 in all preceding centuries - I always localise the dates of something their position in this line. This Battle Materloo 1815 Lucentinie Death 1714 hakesperis death 1076 Janua Reformation 1577 Battle of Agencionsh 1415 Magnathanta 1215 all very about the same place in the respection Ecurrences of the pattern. The Norman Conquest 1000 orenpies its Jorque place, consponding hearly to Charles II. 1000, george III 1760; but beyond this the live becomes vague Suppose because in Early School Intones began depuilety with the Conquest); Imly reappears about 200 a.D - when it follows the usual conset as 1. All the year B.C. + ad 200 to 1000 a so an "Oarthe leger" in my dorone dogy. My memory is us good for arbitrary hunders of can only remainder them by referring

B. Woodd Starth P.251 2 the wents to a few landmarks, fixed in my mind with much difficulty oparty by artificie mismonie = The days of the with also have then fymes an wregnlar circle, in which the meiday is in. mediately opporte Semday, the three last sikdays only occupy the same space as the first two. thus . I what a milarly the months of the year have their Fyre, I appear very much in this way, with a charp bend at New years day to more gradual me at April, Ime, atugent art corresponding monther at all | - the lash four months beging squeeps into a short line thus - 3.F.M. (I have Noun X 3.F.M. (I have Noun X 3.F.M. too short This is the weekday form here towariable -

On visiting a new town I instructively lay down the plan of it (n rather it lay they down) in my mind, with reference to one leading line, the points of the company, & carely forget it. But if the first impreseron i vagne Br Erroneono Ari mot difficult to correct. One town (Kadderminsta) with which I am familiar has no leading line but free winding loads deverge from a centre, in varion direction, though thank almost Enery house in the place, I have I think out hery Load separately when I work to secall the greek plan. In my prot mit to a prend's house in Surry I in some way mitted to notice a time in the load made the house front Windle fr. raltemps I have been there lovery tring quice, Can never get men the first impression, Your have by a great sport to time the house 20mil to my mind While my memory of places is accurate, it always

dimmishes the scale. In revisiting a place after a long interval Ignerally pind all the object in their relative position I remember, out farther apart them Sepect. I have for years been in the habit of sending myself to sleep at myhr of wakeful, by Eensmeering out some formery Shave made, going steadily along from placet place, my not allowing any association of ideas to ture me from my chosen track. A single tour has sometimes lasted me for weeks, taking it the me night where I became unconscions the preceding me -I must apologiese of these details are too honderme. I write a this paper instead of a the com. Jan farthpilly Francis Gallong Mrs. 1. Woodd Smith .

Bard Woodd fuil F. 27. en 1 putation GALTON PAPERS Branch Bill Lodge, Hampstead Heath. N.W. 7.126.1880 lem In I hur sony L Forthe you again; but I have mislaid the tom Ship Lent me L fillup. Itame just When Iron bery much runpied, I put to m me side the A contation

F. 27V attended to properly + how I church put it. Jymoule knowly les he have another Inte anower gon guestion to the best fry ability . pr. Some gudo hor los a repetition of my state. ment to trianalised humber

15 wood Smith F. 295 COLLEG Branch Bill Lodge, GALTON Hampstead Heath. PAPERS Feb 28 - 1880 lem hu' I amany much oblyed by you kind hori. tation for Tuesday with the g. of March, shall have huch pleasure in meeting Jon at 6.0 at the Pall Make Restaurant. I have answered the gneries to the tech of my

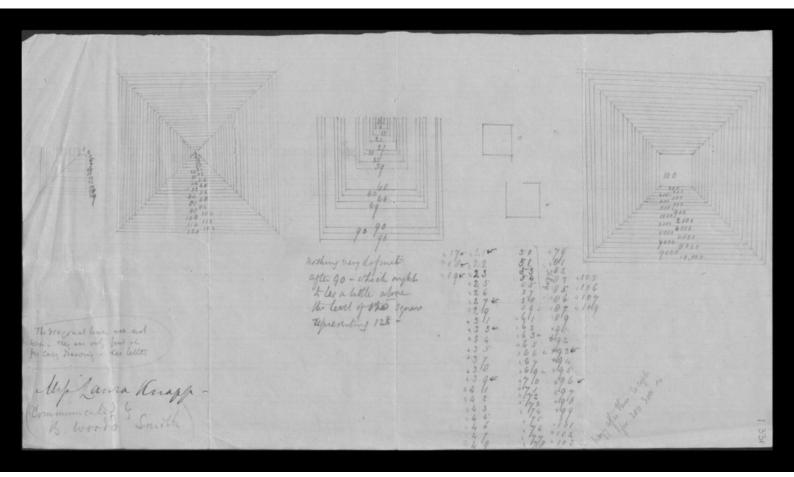
F. 291 ability - I shall bery happy of they can to of service to you he long toky Pany make what use you please them. prus very truly. Amoda huith Franci fallen & PRI

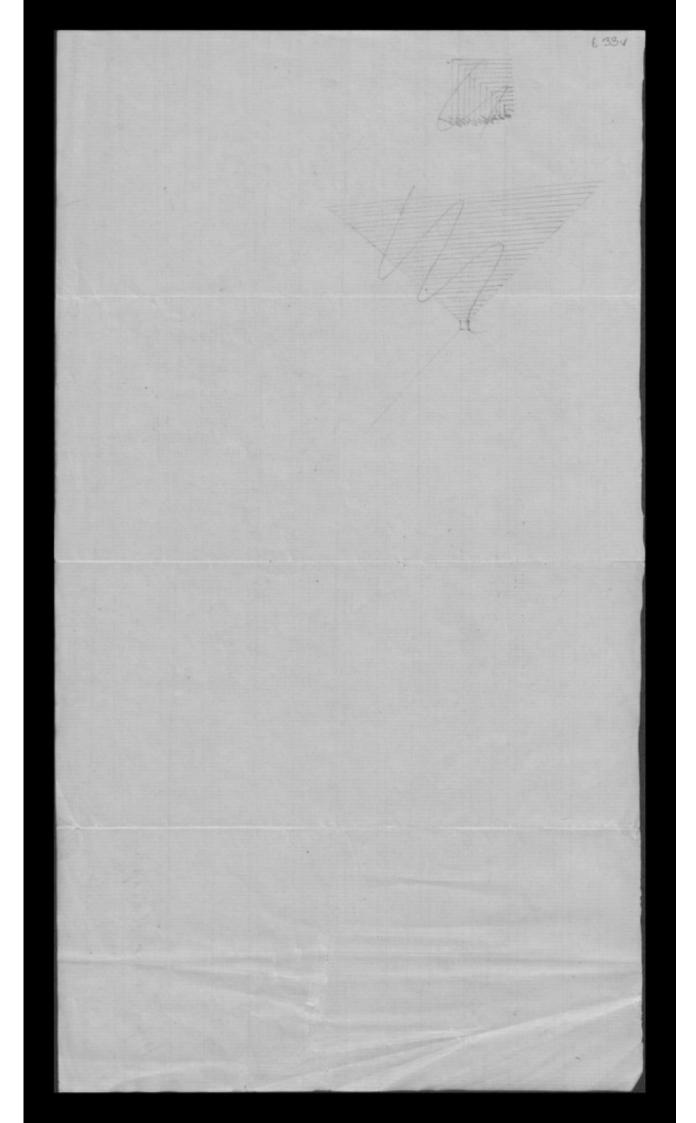
B. milli Knappnick f. 311 Communicated by Branch Bill Lodge, GALTON PAPERS Hampstead Heath. April 2. 1880. My dem Si Im an still working at Vienalised nimber the metned form may intert gp. beny Su. tirely different from any zon have Schibilet . His that gry dilly governen. alar between 20+50. The Unileur I advage appeared all tis conficuous by the absence . 2,3,5,7, 14, 11, 13, 14, 17, 18, 19, appear as shown in the left have, a two sites of a square layer a smaller accords I the similer. Mal monteen divisible by 4 appear a complete

F. 311 Ignales of proportional Inje- me withing the other. The modely lale timble by 3/6,9, 15, 21, 27, 30, 33, 39, 60, 63, 66, 69, 90, 93, 96 appear as three sides of a sprass also of porportional soft - but these luclead of being concentre like the com. plete Sentres, all come to a line at the top - the truther in parallel column appear a me or other of the Syname above, with ather (0) the Eight hand ride prolonged since a len dosnarad or (x) the topside broken on the left 1 17, 18, 19, 21, 27, 33, 39

F. 32r 63, 66, 69. 93. 96 applan in one or other of these form (according to a o prefixed) a will as in the Earlier forms. Aynd 100 the become hagy. Sceeps that the hundred themands go the afains Indefinitely - the deagonal this in these dragram 4 has Seen in the pyones but i may put mas a help to transing. The groups of fynes are the starts up a the encles i then of. This purely a mental per-

f. 32~ ceptin, without any background pour of the observer. No actual arabie a other pyures are seen, there is us then of colour . When a sumber above 100 - say 280 4 Thought of . the 200 Ignau the There is no figure for days of the week a months of the yor, nor for dates in chronology. I have this is intelligible. I have taken it down a Map Knapp har given it me in an swir to prestim, I melneha ma pying Latter than copy of





B. Wood mith f. 34r about mip Knapp COLLEG Branch Hill Lodge, Hampstead Beath. SHE GALTON PAPERS N.W. Apl 8. 1880 My dem have non guestimed Mistingh - whose pyni form I sent you the the day, with the following usult. There at one that the two going in your letter would and or for by i 68. Junen the me Ignace = 68. the Smalle me i more like 32. The Say that of they are not oran aboutely spraw they confuse he Each series of piperes is male. pendent of the other. The signal fr. 4 a always about 14 gan mit, of

her focal distance - tappen to b bery deprite. 100 which in the centre of hutter group i about 5/8 A an with . So in the stro this lays then 100. I then the with a scale & it seems the Clearly marked scontant. 39 a layer than 40 obelong Santhe series . Do i the same Ige as 40 . There setter to lasken proportion between the length of the side Mon humbers they Stand p. bit it is not always hantaned. The caugh say har it my.

hater, mi it has sented fre larly youth - yout for Childhood. You ask if in thenking the 40 she seen 40 × 6 side by Side . 40 has the na pyine, but he (say) 131 she sen 31 100 I don't wonet for these being the letature sijes). the fire Sené Myine LAURUA are alwhy in them proper play the me a more appen as they are called for - hoth 2yand

to the time - hup 12 says that Shen the reach written fyures she does not see the form, hr my then she that's of the the fyne within he , therepu Elad the the following sets of Emplen, the Called of the form in the time hand. De7, 28, 13, 52, 12, 87, 19, 13, 22, 34, 71, 39, 41, 1 how 22 secans 15,21,23,91,75,44,60. 3 - 26 -IT) 121, 117, 345, 187, 13, 6, 25, 413, 181, 96, 47, 21, 37, 682, 113, 7, 37, 50, 1, 79. 1. 25 08 Cmids hoerage 23 decourts 2.25 33 22. to 20 Finner

III 3. 6, 7, 11, 13, 18, 2, 14, 4, 2, 3, 1, 19, 5,9,4,17, 187, 2,11 1: 17 siconds 2 he formes elem to the very device able in addition, but appeared by the much used in the perate The pyines 5 Whe shan he lotting prim the Ingris 8, formed her sprem Mangh the \$ 36. Imilarly, paper was up. I chedna, The 4 wortes dan at aw at a flunce Eurona the following pyne, 2 When the salt at mee that 1,23 made her At Ignail, 8,7101,a 15 quare, & 3,5+8, paning mall \$158, made another 16. This appende

any remarkable aptitude for with motie finerally she tell meshe Can go through her pupils arms tish of they are right total while giving them a muce lesson without interrupting her conding. This I should think i muend - Stee able to Carryon two process fronting as the show hunt. Turning banken Subject-I dn't know yyou ble at Syndalli Lection today. be had septiments a sub.

Jetive Colour - a milliant disc of coloned light being throw an an otherse dark Screen. & These Inddenly Ummy An screen & lighter smerely with that light when the disc of the complementary Colon appeared in the place. Ifmud that my late of preption of the calletine Colon bared Very much pro that of me they - t vaned for opperent colour. Specially the blue complement

to me when many Min and she ble applanding it. then it gradually appended Herme very detriet. The film complement of maghila Came much more prickly. The hover would probably be dependant a sphypistor Conderate - the stationer, Atu Utina Lapent Colona. And I was struck with the Inached character of the defence Mun Juntil mold Swith

f. 11 GALTON LONG 15 Albemarle St. 14. X1. 79. Dear Mr. falton, Thank you for your letter and the forms re visualizing. the sucction, are most interesting but are very difficult to auswer, owing chuff to the want of a definite standard b work from. Spear you will find that afferent indridads will have Luch diverse method of expressing Their own accuracy of perception that you will find it &ficult

.f. 1v barrauge the nuren jon receive loas to make them of statistical value. To much would see t me to depend on Education & habit, that it would seem very afficill to be honest in one; auswer, Thave attempted t fill whene of the forms + should be glad to alle by method if you would kind let me know if I have fallen into any

erron in that respect. I acquire visual Ilupression ather story but can retain accurate picture, of euch impression, Then once formed. There was such a very Small meeting atte Maid. Club. (2 member 2 Secs) That I did not got any one to ausuenzar justion, but Smay heable by some militiquet persons to fill up them you sent me.

f. 2v Shope you will be able & come & ann Ornier rux month Ma veg sund foralit yes. GALTON PAPED

Ywle Prover Road F. 3r Eachcond S.W Colond GALTON LOND PAPERS NO Eadscord S.W 206.6/80 Dear the Julton, Thave not set read Bunkung, though Theme been depluy interit at the club, & mean hour I. Jude do shar Ican in the course of a week, I lot you Know my chinion of I protime hrad inonfr. Thave been realt inturted in So haper from nature. Whing back many things now almost monbund, in ones intornal processes, which I neni inhected the the mbred of same. the investigation. I say monbund because the nouale sation that were once bught & this taneous. I now have rather to rummen from timbo -, & hard feel

muchethe what I hing up are really such still hayany is only the recollection of what made trace wind. Ful as to numbers. your lady ho 18 has exact the same record hen that There or used Whene, 1. c. arregards for geometrical form, only I am not me that the angle at 20 is a regulargle, or the line 120 pour 20 \$700 Array -12 - (Here a durson of shade book place - not ario. heather do I (or did I perhaps more comedy) see them in type or black on white ground mard tree them in gradations of colony the romenhat as in no 14's vision. But I can't fix these now with truth , and all

my noualising of this kind is helplest by the back that Jam (to the usual extent in mchcases) alour-Vind, & though See The colours I often can tite what they are I can only remember now that 30 & white 40 were of a subduck turny fillow, my like the whour of triday! how of course you comprehend that? This hung me to the day of the week Sunday Monday Wedneder Mulin Diday Saturday I dont of any description would give a deaveridea of my anception. Sunday K Monday Munk used to have some du = Indean but I cannot now grash I. Thuday I huday were vy like only tuday was brighting - more light on it. Sunday, Monday, Munday + hiday had some kind of architeducal decoration - shoral columns is the reacer-

connecto infreepeon that will come . herday. wednesday & Faturday were whon these The colour darker at the cheer, Ingland The middle . mesday somewhat the talentas but much lip hight. Wednesday contraded in abour with the day on each nde of The months also had once time shades of sour - not allowther, thongs hukaps of summer & winter . I m/ remember that hely was something like wednesday, I October was ong dark coloned, September bijnt leke laturday but like helphendnezzna dream the vioron in pone from me.

The centuries also have the Churkan wa had their light, & alours. Here here hape the notion of the dark ages may have come in, for sun hype began about the 11th century - it shile rests whon the 14th - or rather the 1300's as runceine is when is yellow & sunny, like Inday from Whe Saturday, copecially in its pirst half.

The 15 hearten is something like Thunday - the 16h Huish tel with white, like wedneder - 17h & 18h darken, 19th leptensup afain Now you are responsible for the attempt Therefulate all this apparent nonsense. ham yunter flute GALTON COLLEGE

f. 6 Color Gale Jeb. 26/80 GALTON PAPERS Dear mr Salton Wall pre me much pleasure & dine with you on the gh 2 po the meeting. mile leave my lakery hart in the descukion to the potune. Mina Vhence complied my tack on the myed. If the weather continues mild mill ask a hetter for two ladies - of that be needed Jan your mfaithful Aque 7. Gallon Vinc