NEWS OF THE THEATRES.

From last week's memorable sufficiency of new things at the theatres there will be to-morrow night a change to something like the ordinary course of events. No drama of novelty will be offered at any play house, and there will be no new actor to command attention. All that will be unfamiliar will be found in the comic opera which Palmer's put forth as the first entertainment of its summer season.

The first of the Charles Frohman Comedy companies to leave town will be that which has for several months performed "All the Comforts of Home" at Herrmann's. This week's representation of Gillette's skilful farce will end the Frohman season at Herrmann's, and if that cosey little house is used at all during the summer it will be for what may be termed scattering productions. The Frohman comedians are to return to Herrmann's in September for another term of farce. Jonnstone Bennett, who is to introduce to American audiences the title rôle in Lestocq's comedy, "Jane," will sail for London in a few days. "Jane" is running with much success there, and Miss Bennett goes over to see how the English impersonator of the chief character interprets it. "Jane" is from the French farce that has given rise to "Lend Me Your Wife," "Borrowed," and two or three other English farces.

Sunday entertainments in theatres are not yet exhausted, it seems. To-night, Mabel Stephenson, a whistler, who has an enthusiastic following on two continents, will give a concert at the Garden Theatre. She is going to Europe in a few days to try to fascinate Englishmen and English women. At the Park this evening, John F. Harley's special show will be given by Eloise Mortimer, Joseph A. Ott, Dora Brothers, Lilla Linden, Harry Fisher, May Yohe, Ignatio Martinetti, Rosa Lee, James T. Powers, Charles Reed, Peter F. Day, William Collier, Harry Kernell, Ross and Fenton, Minnie Dupree, George Lieb, Richard F. Carroll, and the Clipper, Harlem, and Unique quartets. A benefit has been arranged for E. J. Rice of the Standard, to occur at that theatre a week from to-night, and on Sunday evening, May 24, J. Thomas Maguire, general Treasurer at the Bijou and the Fourteenth Street, will have his annual testimonial. The Meagher Irish Brigade Association will countenance a benefit performance for the widow of Capt. Healy this evening at Harrigan's Theatre. Harrigan and Hanlon give all the facilities of their house, and the volunteers are numerous and talented, thus insuring good diversion.

"Reilly and the 400" has passed its 150th performance at Harrigan's with flying colors and all the marks of genuine and unforced success. There were no souvenirs, and probably there will not be any when the 200th night shall be reached. Manager Hanley is one of those old-time amusement caterers who hold fast to the customs of the bygone days. The souvenir has never been popular with him, and it delights him to know that Harrigan's can draw crowds without extraneous aids. The current play is likely to last well into July.

To help the Memorial Arch Fund, there will be a performance at one of A. M. Palmer's theatres a week from to-morrow afternoon. The Jefferson-Florence company will come together again for a single act of "The Rivals," and the remaining portions of the programme will be supplied by amateurs.

A goodly number of our actresses are in Europe, or going there for semi-business purposes. Minna K. Gale, who is to star pretentiously next season in Oscar Wilde's "Countess of Padua," which the late Lawrence Barrett produced last season, will make a trip to have an interview with the æsthetic author, and to get costumes designed by him. It is said that Margaret Mather put in a bid for the play, but failed to get it. Miss Mather will not retire from the stage on that account, however, and has gone to Europe, seeking a still more difficult task of getting a drama from Sardou and playing a Bernhardt rôle in it. That seemingly impossible, Elliott Page sailed yesterday. She will come back to play the Ada Rehan rôle in "The Last Word" during a winter tour of this country. This is a venture authorized by Augustin Daly. Minnie Palmer is already in London, and the understanding is that she will take an engagement at the Gaiety Theatre, instead of returning to America. Mrs. Leslie Carter telegraphs to her manager that she will quit Paris this week, spend two weeks in London, and then return home to prepare for the new play which she is to use next season. Lois Fuller has not yet abandoned her hope of gaining London audiences. On Tuesday afternoon she tried a new play at a special matinée, according to a cablegram received yesterday by one of her friends here, she is pleased with the verdict of her audience. It is evident that Miss Fuller is not yet ready to come home, but she would surely fare better here.

The season at the Harlem Opera House is prolonged by this week's special engagement of Frank Mayo, who is almost a stranger to New York audiences these days. "Nordeck" and "Davy Crockett" remain in this picturesque and earnest actor's repertory. He has gathered a good company for his Harlem season, and he ought to face a crowded house every night.

The east side theatres make attractive offerings for the week. "The Burglar" will be at Jacobs's. It has no novelty in town, yet it seems to lose no degree of interest for playgoers. The cast names a dozen competent players. The actress who will play *Lady Deadlock* and *Hortense* in "Bleak House" this week at the Bowery People's is Jane Coombs, and she will be almost unknown to the younger generation of theatregoers. But there are older play patrons who will easily recall her as an admirable leading actress in the stock company days, and a little later as a star of some note. In recent seasons Miss Coombs has travelled widely in the West and South, avoiding this city by design rather than accident. There will be interest in her reappearance, therefore. Her company includes several actors whose names are not unfamiliar to New York audiences. "Bleak House" has been a long time in Miss Coomb's repertory, and her *Lady Deadlock* has become quite famous out of town. At the Windsor, "Little Lord Fauntleroy" will have a cast hastily engaged, but there is a strong likelihood, nevertheless, of a tolerable performance, for most of the actors have appeared in one or another of the recent Fauntleroy" troupes.

London's dramatic critics have been inspired and cheered by the good fortune that has suddenly attended upon Clement Scott, who is a poet, a playwright, and a zealous and temperate student of the stage. A pretty, fair-haired young lady, a Miss Drew, who resided at Clematis Cottage, Aloha road, St. John's Wood, was a constant attendant on first nights at the London theatres. Miss Drew, it seems, had conceived a deep admiration for Clement Scott's writings, and at her death recently she left a will—proved in Scotland—by which she made Mr. Scott the sole executor and residuary legatee of an estate of nearly $105,000. The legacies to be paid out of this sum were not very large. To her Sister Miss Drew left $25,000, an annuity of $250 to another lady, and a valuable piano to Willie Wild, also a dramatic critic, and to whom, it is said, Miss Drew was engaged before she became acquainted with Scott. "What with his half pay pension from the War Office," says a friendly newspaper, "and his fine inheritance, after duties and expenses, of about $60,000, Clement Scott has no necessity to write another line." But the co-adjuter of "Diplomacy," the enthusiastic editor of the *Theatre*, and the critic of the London *Telegraph* will, we dare wild, pen many another graceful review for his thousands of readers.

Richard Mansfield is not ready to try his own play, "Don Juan," at the Garden, and so he will fill this week with revivals of "A Parisian Romance" and "Prince Karl." The French drama will be acted on Monday, Tuesday, Wednesday, and Saturday nights, and Gunter's comedy—which is the most entertaining stage work ever put forward by this author—will be performed on the remaining evenings and at the matinée on Saturday. There is a wide artistic gap between Mansfield's senile *Baron Cherrial* and his manly young counsel *Karl*, but the actor easily triumphs in each role. His admirers, who seem to increase rapidly, will hail with pleasure this opportunity to view him in his earliest successes. When "Don Juan" shall be ready it may be expected to last a long time. Mansfield is preparing for it carefully and even laboriously. The scenery, costumes, and all the accessories will be rich and picturesque.

Four months of "A Straight Tip" and James T. Powers have not been too much for that portion of the theatregoing community which still finds entertainment in variety-faces. The New Park is well filled every night. Laughter is abundant, and there is no question of the hearty acceptance of this mixture of frivolity, melody, and terpsichore. This is the last week of "A Straight Tip," which will take a vacation until June, when it will give to Chicago. Its successor at the Park will be "A Knotty Affair," thus giving a continuance of farcicality.

"McCarthy's Mishaps," a droll Irish farce that is not unknown to east and west side audiences, will reappear in town to-morrow night at the Fourteenth Street. Its stars were the original variety "team" of Ferguson and Mack, and Barney Ferguson is still in the cast. A laughable figure and a clever low comedian, who can sing and dance finely; but the original Mack long ago gave way to another vaudeviller of the same name. The farce has all the constituents of its class. Out of town this season it has been well liked, and doubtless it will be a merrily acceptable show for this week at the Fourteenth Street. Effie Ellsler will be the ensuing actress. She will have a new company, for this will be a special engagement. Next season she is to return to the tears of *Hazel Kirke*, and the veteran Couldock will again be the iron-hearted *Dunstan*.

Rosina Vokes intends to devote the remaining fortnight in her spring season at Daly's to a revival of little plays, and this week the triple bill will be made up of "Percy Pendragon," which is an abbreviation of "Married in Haste;" "My Milliner's Bill," in which Miss Vokes tells about the art that was true to Poll; and "My Lord In Livery," S. Theyre Smith's old but still useful farce. In "Percy Pendragon" Felix Morris has the lead, but Miss Vokes dominates the trifling piece with her captivating and infectious jollity. The final opportunity to enjoy the performances of the Vokes troupe should not be neglected. It is barely possible that Miss Vokes may not for a long time fill another spring engagement at Daly's. Sol Smith Russell is more likely to be next year's first visitor there.

A manager who is perhaps more daring than discreet has nearly completed plans for a test of the "Theatre Libre" scheme in New York. He is Henry J. Belmer, and, although he is a good actor and a reputable business man, his ventures hitherto have not been important. He is recalled as the star in several sensational plays at various times witnessed in Bowery theatres. His projected venture is to conduct a summer season of drama at the Windsor, to start on June 1, or thereabouts, and last ten weeks or longer. For this venture he will engage a "stock company"—using the term rather unwarrantably, as is the custom nowadays—which he will select from professional and amateur applicants, and from the multitudinous schools of acting. The roster, he promises, will contain names enough to fill three large companies. Good actors and actresses who have remained in the background for want of an opportunity may find it in Belmer's American Theatre Libre, in the Bowery, at any rate, so Belmer promises. "they will have a chance to appear in strong rôles in city productions that have not lost their gilt edge by too frequent use by local favorites." New plays by native authors will be solicited by Belmer and every piece selected will be acted at least one week. Curtain raisers will be tested, new scenery will be painted, and competent stage managers will superintend the rehearsals. All this is pleasant to read about, but it will cost money, and ten weeks of it in the June, July, and August Bowery may put a new aspect on the scheme. At any rate, Belmer is bold enough to try it.

Three city playhouses are in disuse this week. Two of them, Niblo's and the Amberg, will not be occupied again until the fall season. There is no doubt as to the Amberg's future. It will have a new double company of German actors and singers, and the novelties of Vienna and Berlin will find quick performance in America at this little theatre in Irving place. The progress and energy of the German stage in this country must be a source of constant gratification to Amberg's supporters, for he and they are responsible for the advance. Niblo's is talked about variously. One authority declares that Gilmore will reopen it with a big spectacle, as is his custom, and that he expects better fortune next season. Another of his friends hints rather plainly that Gilmore has his eye on an uptown site, and that he has numbered his days at Niblo's. The Lyceum, the third dark theatre this week, finished its season with yesterday's performances of "Old Heads and Young Hearts." It had been a brilliant winter and spring there, take it all in all. The company was called upon to interpret a wide range of characters, and their endeavors were artistic, earnest, and intelligent. Only once, perhaps, has there been a loss of the effectiveness that commonly marks the Lyceum players' performance. The company are now started on their tour, which will be pleasantly punctuated by a few weeks' rest in the city ere spell. In the late fall, after Sothern has fulfilled his annual engagement at this theatre, the Lyceum's stock season will open with a new play by the brilliant and polished Pinero—"Lady Bountiful" is its title. The only summer visitor on the Lyceum's stage will be Robert Bruce Mantell, whose engagement, to season, will begin on May 25, in two new plays—A. R. Haven's "The Veiled Picture," and John Ernest McCann and Nugent Robinson's "A Lesson in Acting." This will be an important test for Mantell. It will be his first experience as his own manager and capitalist. A new company will aid him.

Stuart Robson's records of the life of "The Henrietta" show that he has played *Bertie*, the vacuous but honest lamb, nearly 600 times. New York has fully one-third of this achievement to its credit, and Robson has made money enough with the piece to last the remainder of his days, if he could be content to stop work. But, though millionaires retire now and then, rich actors never do. Robson, with all his wealth, is as ambitious as he was when "The Two Roses" or "Saint Germain" bankrupted him years ago. He is now looking forward to the elaborate revival of "She Stoops to Conquer" next year, and he will spend plenty of money on the venture. His current engagement at the Union Square will continue until May 30. "The Henrietta" has attracted large audiences, and it is now unlikely that there will be a change of play. The lively opera "Ship Ahoy!" will come to the Union Square after Robson, for a long stay.

A Hoboken novelty that promises well is "The Broom Maker of Carlsbad," a dialect comedy in which James Reilly is the impersonator of the title character. Reilly comes from the variety stage, as every other dialect actor has come in late years, and he has been a star long enough to become popular on most of the circuits. He will appear at Jacobs's Hoboken Theatre to-morrow night, remaining also Tuesday and Wednesday. "Guilty Without Crime," a melodrama from many sources, will be acted on Thursday.

Announcement of another visit from Lydia Thompson—she will be at the Grand Opera House this week—gives rise to speculation as to whether she has not played at more New York theatres this season than any other actress since the fashion of "making the city rounds" began. "The Dazzler" certainly has left no section of the metropolis untouched. This is good testimony to its popular success, and it is not to be wondered at that the festive Lydia and her company will continue in clover. She will, therefore, continue to play "The Dazzler" all next season, and she has re-engaged most of the members of her present company. The summer season of English grand opera at low prices will open on May 25. "Lucia di Lammermoor" will be the first production. Montegriffo, Tagliapietra, Pauline L'Allemand, Louise Leste, Nathal, and Bella Tomlins are under engagement. The season will last six weeks, perhaps longer.

At the Harlem Columbus this week Hoyt's "A Midnight Bell," with George Richards, Eugene Canfield, and most of the other actors who have been in this enjoyable comedy during the past two seasons, will be revived before up-town playgoers. It has not been in Harlem so often that it is worn out, and its visit at this time is likely to meet with wide approval. Next week's combination will be the last dramatic visitor to precede the summer opera season, which will commence on May 25 and last at least six weeks.

The Casino's fresh operatic spectacle, "Apollo," is apparently good enough for all summer. By and by the roof garden will be opened, and then the town will have a real warm weather napper. The Casino's second troupe has just finished its tour. Frederic Solomon is reengaged for next year, but Camille D'Arville, a charming actress and singer, announces herself as "at liberty." Miss D'Arville is a high priced performer, and there may not be many American bidders for her services. In that case she would still be fortunate in London, where the audiences are affectionate, even if the managers are not extravagant. Max Freeman's return to the stage management of the Casino is an assurance that the performances will not decrease in brilliancy or in finish.

"O'Dowd's Neighbors" has tickled the fancy of the town's lovers of light fun at the Bijou, where it begins its second and final week. The farce gains its greatest momentum on the pathway of success through the efforts of Mark Murphy and Sam J. Ryan, aided and abetted by a well-picked company of singers and specialists. Minnie Cunningham, an airy and graceful dancer; Helen Bainsley, a comely woman and a fine singer; Hattie Delaro-Barnes, an agreeable actress, and Lawlor and Thornton are among those of the cast who have scored distinct hits. "O'Dowd's Neighbors" is a good sample of the latter-day farce, and with its present cast will wear better, perhaps, than many of its competitors. At any rate its success on upper Broadway may be assured. "Aunt Bridget's Baby," a new farce, will be at the Bijou next week.

"Mr. Wilkinson's Widows" is enjoying a steady continuance of the high favor that was awarded to it on its very first night at Proctor's. The audiences are still large, and there seems to be no reason why Gillette's bustling farce will not remain in town a month or six weeks longer, as is now planned. About June 20 the company will be transferred to Chicago for five weeks. After that they will return to Proctor's, where they will revive "The Widows" until late in September. Then Charles Frohman will have a new play ready for the public.

With the end of a week's visit from a band of travelling vaudevillers, a "house" company will again rule at Pastor's to-morrow night. Lottie Gilson, a clever and agreeable little balladist; Frank Bush, an inimitable wit and mimic, and Flora Moore, a versatile character singer and dancer, will head the bill. Other entertainers will be the Midgleys, late of the "Natural Gas" company; Charles Morley and his trick horse, "Star Spangled Banner;" A. O. Duncan, ventriloquist; Lord and Rowe, eccentric comedians; Isabelle Ward, instrumentalist; the Fitzgibbon Sisters, character singers; Adrian, magician, and the Morley trio in their new sketch, "The Invisible Concert."

Representations of the principals in the Fourth ward horror form the latest additions to the Eden Musée's inanimate features. The Japanese jugglers and athletes and the Hungarian band remain pleasing and potent attractions.

With the curtailment of its redundant words and a judicious smoothing of its rougher edges, the Academy's latest offering, "Home, Sweet Home," now realizes its title reasonably. The story it aims to tell is good, and the realisms it employs are excellent. The horse race, devoid of any mechanism, is thrilling, and the reproductions of farm life are natural and interesting. "Home, Sweet Home" will occupy the Academy for a month, probably longer. A few changes have been made in the cast.

At Koster & Bial's Garden, to-morrow night, Jennie Joyce and Madge Lessing, burlesquers, will introduce new refrains in "Adam's Temptation." Carmencita remains a favorite. This week's specialty bill includes Jo'n Le Clair, Sherman and Morrisey, Adile Western, Paul Savilio, Dixon and Lang, and others.

A new comer in the cast of "The Henrietta" at the Union Square this week is Gertrude Conklin, an earnest and ambitious young aspirant for histrionic honors. She will make her début as *Lady Mary*, in Stuart Robson's support, on next Wednesday evening. "The Henrietta's" triumph is still solid, and there is evidence that Robson's tenancy of the Union Square will have favorable results in every way. With the advent of June the "Ship Ahoy!" company will return for a season.

Martha Morton's view of American business life, "The Merchant," a capital play in many respects, has drawn large audiences to the Madison Square, where it is to be performed three or four weeks longer. Miss Morton possesses the distinction of having won the best success achieved by any female dramatist in this country in recent years. Not many American women have written acceptable plays, anyway. Mrs. C. A. Doremus's feature in Began and appear to have rested with "The Circus Rider," which she borrowed from the French; Fanny Aymar Matthews, a writer of undoubted ability, has yet to demonstrate beyond litigation that she can make a drama; Eliza Marbury has confined herself to adaptations which have not had wide publicity; Estelle Clayton's title as a playwright has never been satisfactorily established, and, even if she had proved the genuineness of her authorship, there would be slight credit awaiting her; the Philadelphia lady who, four or five years ago, figured in the authoress of "Our Society," for the Madison Square, was assisted by Clinton Stuart, and both were translators of the brilliant Pailleron's "Le Monde ou l'On s'Ennuie;" Mrs. Alice Ives, late of Detroit and now of the metropolis, has produced "Lorine," an emotional play of not uncommon merit; and Marie Madison, who is young and really clever, has been more industrious but less triumphant than the authoress of "Helene" and "The Merchant." It will be well to watch and to encourage Martha Morton.

"The Envoy," at the Star, has been viewed by fairly large audiences since its opening night. This must be taken as a tribute to the combined popularity of James O'Neill and Louis James; and it is a fact that the town does not often see two actors of equal conspicuousness on the Star's boards. It is asserted by the Star's management that "The Envoy" has been improved since Monday night, and that the performance is now smooth and continuously interesting. But it is safe to add that the rôle of *Count Peroth* will not be in O'Neill's repertory after this engagement; it is doubtful, indeed, if he ever contemplated its permanent use. Louis James has signed to play in a summer company in St. Paul and Minneapolis, and he will start West early next month. In the fall he will head the "Soudan" company.

Daniel Sully will finish his engagement in "The Millionaire" at the Standard this week. He has been cordially greeted, and that is a Broadway record that any star may be proud of.

"Wang," the first of the spring operas introduced to the town, has hit the public taste. Big and clownish De Wolf Hopper and natty Delia Fox find congenial places in the new work. Aside from the Oriental scenic splendor of "Wang," the drollery of Hopper, and the sprightliness of Miss Fox, the singing of Jeannette St. Henry, a new and talented prima donna, has proved one of the most refreshing adjuncts of the new opera. Miss St. Henry's success on the opening night was thorough and true. She is the possessor of a rich, finely trained voice, and her personal charms are many. Bright-eyed Annie O'Keefe and funny, acrobatic Alfred Klein are among the others who help toward the jollity of "Wang."

Brooklyn Amusements.

Brooklyn Park Theatre will have, this week, Hoyt's "A Texas Steer," performed by exactly the same company which presented it during its long term at the Bijou in New York city. This example of Hoyt's handicraft strikes midway between the outright farcicality of his earlier pieces and the comedy of "A Midnight Bell," and its humor is rich and original. Tom Murphy's Texas cattle king and Flora Walsh's *Bossy* are the strong rôles, but the cast is excellent throughout. A play by Clinton Stuart, called "Will She Divorce Him?" will be produced at the Park on June 8, with Cora Tanner as the heroine.

That slap-bang farce, "U and I," which has had a prosperous term in New York city, will be played a week at the Lee Avenue Academy. Gus Williams and John T. Kelly will retain their rôles of the German and the Irishman, and the company of singers, dancers, and mimics will be unchanged. "U and I" is a first-rate example of the dramatized variety show. Assistant Manager Howard will have a benefit here on May 18.

Ullie Akerstrom, an original and peculiarly amusing actress, will spend the week at the Grand Opera House. Her play, "Annette, the Dancing Girl," and herself are already stage favorites elsewhere, although they are not familiar in Brooklyn. Miss Akerstrom sings, dances, and is a sort of Maggie Mitchell in her own way.

For the revival of "Under the Gaslight" at Holmes's Star excellent scenery and mechanical effects are promised. This old melodrama of New York life has justified its reproduction elsewhere, and it is surely superior to the current London plays of the same class. The cast at the Star will, it is said, be adequate.

Manager C. F. Gebhardt of the Brooklyn Casino will bring out Edith Craske in a "dance of all nations," she assuming the costumes of many countries; George Holloway, late of Herrmann's trans-atlantique company, in his specialties; Flora Hastings, Charles Duncan, and the Rice brothers will be in the group of variety performers on the stage. Minnie Schult, a strong and attractive soprano, continues as one of the features at this garden.

"Dr. Bill" and "Barbara" will hold the stage at the Amphion during the week, followed by the Wilson company in "The Merry Monarch" on May 18.

The Dime Museums.

The dramatic venture of the Doris Musée, at 851 Eighth avenue, last week, has induced Manager Doris to make a more attractive one in the way of opera this week. The lecture hall will offer its usual fat and lean people, giants, midgets, sword, and knife swallowers, the "skeleton of skeletons," with many others who are paid to be looked at, and seem to find it a pleasant way of getting on. In the auditorium the management will introduce the well-known opery of "The Mascot," with not only a company of singers for the characters, but also a chorus. Miss Maxwell will assume the title role, with Mr. Donnelly as *Lorenzo*.

Prof. Worth says that he will make his lecture room particularly interesting, as well as the performances on the stage. Stewart, the armless and legless man, will describe how he exists in his abbreviated condition; Hilton will show how easy it is to understand magic; Hasson will describe how he educates rabbits and geese to support him in his efforts to rise in the world; Johns will appear in ventriloquism and magic, and the long and short of it will be represented by a negro giant and a white midget. In the auditorium there will appear in variety selections Fielding and Walker, Hefron, Andy Collum, Jas. W. Thompson, the Blacks, De Rook and Girard, Devere, and Kitty Smith, the transformation dancer. On May 18 Col. Milliken's comic opera company and the "ladies' musical convention."

The attractions for the week at Huber's Palace Museum will be "all new, and of a character to please the patrons of the house." The horse Linus will be replaced by another beautiful stallion called Romeo, coal black in color, and declared to be the most perfect specimen of horseflesh ever seen in New York. Souvelle handles rattlesnakes and alligators on the main stage of the large hall. Lewis and Pail will mystify policemen and detectives by the easy manner in which they can slip out of handcuffs, ropes, or thongs. On the stage an entirely new company will be seen. The feature of the week will be a road-scolling match in which a number of young ladies are to be contestants.

NOTES ON SCIENCE AND INDUSTRY.

For users of steam power who are not skilled mechanics or not accustomed to run engines, a unique type of engine construction has lately come into vogue, consisting of a moving steam cylinder and moving valve, and a stationary steam chest, thus dispensing entirely with various mechanical arrangements commonly employed, such as the eccentric, valve rod, complicated connecting rods, slides, rockers, &c. By avoiding this elaboration of mechanisms, the advantages realized are simplicity of construction, compactness, self containment, complete interchangeableness of parts, high speed, short steam ports and balanced valves, thus greatly reducing friction. The construction of the steam chest and valve is such as to secure the reduction of "waste room" in the ports, as well as the absence of lateral pressure against the steam cylinder, because the valve operating ports are in a cylindrical surface concentric with the axis of oscillation; there is also a complete balancing of steam pressure so far as the valve operation is concerned, and a peculiar facility in securing and maintaining steam-tight joints in the working parts. The last named desideratum is claimed to be realized to a practical degree which has hitherto been wanting in any of the arrangements introduced for the purpose.

An interesting fact is noted in connection with much of the architectural work of the day, namely, the increasing use of zinc and sheet and plate iron and steel for ornamentation, largely taking the place of plaster and wood for cornices, window dressings, mansard and other roofs, dormers and finishings, these latter being fixed upon brackets to the walls or otherwise secured to the structure. In Australia, notably in Sidney, zinc has for some time past been employed for ornamental ceilings, one of this kind, on a somewhat large scale, having not long since been used in the construction of a hotel dining hall in Sidney, and which, for richness of ornamentation and beauty of design, is said to be unrivalled, the ceiling, as described, being divided into fifteen deep and rich panels. The chief advantages sought of a zinc ceiling are that it can be soon fixed without dirt, and is a comparatively light material, peculiarly adapted to internal employment; the metal can be moulded into panels or coffers, and applied in large pieces, and the material decorated or gilded, and moulded zinc cornices can be fixed "in situ."

A writer in the *American Machinist* referring to the corrosion of boilers resulting in the formation of deep furrows parallel and close to the seams, asserts that in nearly every case this furrowing occurs under the water line and in horizontal boilers with lap joints, the grooves being also deepest along the horizontal seams, the chief cause of this furrowing being, probably, a chemical action, as it is known not to occur with all kinds of water, the phenomenon rarely occurring above the water line. But this chemical action is declared to be accelerated by a mechanical action which tends to change the form of the shell of the boiler, bending or springing the plates along the seams; but this the mechanical action in question may be due to the constant recurring variation of the pressure as steam is made or blown off, or it may be produced by the changes which take place in temperature, and if this change of form goes on continually, even though in but a slight degree along the same line, the mechanical action of itself alone must finally produce rupture.

The new and ingenious method of manufacturing netting, by slitting and expanding sheet metal, recently originated by an English inventor, is likely to revolutionize that industry. In this process a peculiar machine is employed, which so operates on a sheet or strip of metal as to slash it at intervals in parallel lines, so as to leave uncut spaces, which serve to maintain the connection between the strands produced by the act of slashing—the movement being such as makes it possible to transform the sheet or strip of metal into a finished article at one operation, which is due to the peculiar values of the invent on; in a word, the novel and remarkable result is produced by the simultaneous act of slashing and opening or expanding the sheet at the slashes, leaving uncut spaces, and giving uniform design and set to the metal forming the meshes. Any homogeneous metal, such as steel, copper, brass, &c., can be employed. The machines automatically feed a strip of steel between their cutters, which simultaneously slash and expand the metal into meshes; these strips may be of any width, from one to eight inches or more, the length of the expansion being determined by the size of the mesh. Thus, a strip of steel seven inches wide by nine feet long, made into three-eighths-inch mesh for lathing, gives as a result a sheet of finished product eighteen inches wide and about five per cent. shorter than the original strip, whereas a strip of metal six inches wide and nine feet long, made into a four-inch mesh for fencing, gives as a result a sheet with the dimensions of four feet wide by eight feet long.

M. Jaffe, a photographer of Vienna, Austria, has for some time successfully practised at his photographic art printing and engraving establishment the "wet" orthochromatic process. The main points in this method are the dissolving of 2.2 grams of cosine in 250 c. c. of alcohol of 95 per cent., then forty-five grams of cadmium bromide, after which the solution is filtered, and 250 c. c. of water and other added, and finally the whole is, with repeated shaking, added to 1,000 c. c. of 2 per cent. collodion. The sensitizing solution consists of water, silver nitrate, and conc. nitric acid in certain proportions. In this solution the plates are allowed to remain until the film has acquired a violet opality, which is about ten minutes. Such plates, being highly yellow-sensitive, yellow light must necessarily be avoided in the dark room. The exposure must be increased for about one-half of that required in the case of ordinary wet collodion plates. After exposure, the plate is directly developed with iron developer, consisting in due parts of water, sulphate of iron, alcohol, and sulphuric acid; the image comes out quickly, the deposit being produced at the end of the development, and disappearing if the plate is sufficiently rinsed. The plate is finally, as usual, fixed in a concentrated solution of hypo, and washed.

Among the methods resorted to at the paper mills to determine the special characteristics and qualities desired, microscopical examination performs at present an important part, a magnifying power of one hundred and fifty to three hundred diameters sufficing for this purpose. Thus, by coloring the pulp or with a solution of iodine, a yellow coloration shows the presence of wood fibre, a brown coloration that of linen, cotton, or flax, and no coloration that of cellulos. The simple thickness of paper is ascertained either by measuring the thickness of a certain number of sheets, or by taking that of a single sheet by means of a micrometer, the paper being placed between two rules, one fixed and the other movable, acting as a pointer, showing the thickness of the paper on a dial. In order to test the resistance of paper to the most varied mechanical wear it is crumpled and kneaded thoroughly between the hands; where a specimen of weak paper will be full of holes, and a strong paper will assume a leathery texture. The test also gives a rough insight into the composition of a paper, much dust showing the presence of earthy impurities, while breaking up of paper shows over bleaching. Again, an excess of 3 per cent. of ash shows the presence of clay, kaolin, heavy spar, gypsum, &c.

An ingenious stop motion for carding engines is a recent invention. The shaft of the upper calender roller is in this arrangement prolonged beyond its bearing for a short distance, and a worm affixed to the end and gearing into a worm wheel mounted on a stud attached to a bracket on the framing, the wheel also having affixed to its face a pin which engages with a lever, the latter in turn acting upon one end of another lever. The other end of this last named lever is bent in such a manner as to pass under a catch pivoted to one side of the doffer lever, the latter being supported in working position by the catch. When the sliver is passing through the calender rolls at the proper thickness, the worm on the upper calender shaft is held out of contact with the worm wheel. On the other hand, when it becomes too thin or is entirely absent, the worm falls into gear and rotates the worm wheel, thus moving the levers about their centres, releasing the catch attached to the doffer lever and stopping the engine.

For the more accurate communication of orders on board German navy vessels a device has been introduced which enables an officer of the watch to instantly inform himself if the orders given to the engineer and helmsman have been understood and obeyed. This contrivance, consisting of a dial bearing indications relative to the speed and handling of the ship, is placed upon the bridge, and the directions, as given, are transmitted telegraphically to the engineer, who, by the execution of them, causes the hand upon the dial to point successively to the indications of the movement made. A similar arrangement puts the officer in communication with the helmsman.

The interesting fact is recalled by a recent writer that when Sir John Herschel was defending the claims of astronomical science, in view of an error of nearly 4,000,000 miles in estimating the sun's distance, the correction was shown to apply to an error of observation really so small as to be equivalent to the apparent breadth of a human hair at a distance of 125 feet.

QUESTIONS FROM SUN READERS.

1. Will you tell me again the story of Charlotte Temple? 2. How is the pressure of illuminating gas measured? SEXTUS.

1. Charlotte Stanley, a member of the family of the Earls of Derby, was persuaded by Col. John Montresor to become his mistress and sail with him to this country in 1774. He abandoned her in this city, and she died at the Old Tree House, at Pell and Doyer streets, soon afterward, when only 16 years old. She was buried in Trinity Churchyard, her name and the arms of the Stanley family being engraved on her tombstone. In 1790 Mrs. Susanna Rowson, an actress and authoress, wrote a novel, "Charlotte Temple; a Tale of Truth," giving the story of Charlotte Stanley, Montreville, in the book, is Col. Montresor, who was a relative of the writer of the book. Some time thereafter the name Temple was substituted for that of Stanley on the gravestone. 2. The gas passes through the meter through a double bellows having four chambers; the bellows, opening and shutting as the gas passes through, works levers that set in motion the index that registers the number of feet that passes through the meter.

Was Andrew Johnson impeached? E. N. M.

Yes, he was; and being tried, he was acquitted. The average man, though he knows that indictment doesn't mean conviction, thinks—or believes, for he doesn't think anything about it—that impeachment is the same as conviction. It isn't; it amounts to an indictment, only instead of being found by a Grand Jury, it is found by one house of Congress or the Legislature; instead of being for a felony, it is for a high crime and misdemeanor, and instead of being tried by a Judge and jury, it is tried by the Chief Justice of the United States and the Senate, or by the Chief Justice of the State, and the other house of the Legislature. And just as a man, indicted for a crime, may be acquitted, so Andrew Johnson, impeached for a high crime, was acquitted.

What are the national flowers of Russia, Austria, Spain, and Scandinavia? AUTER.

We don't think they have any. Abroad the "national flowers" are those identified with the sovereign and his family. Thus the national flower of France was the violet during the empire; but there is no especial national flower now in favor. The flower of England is the rose, of Scotland the thistle, and of Ireland the shamrock. Germany has no "national flower," though the old Emperor's favorite flower was the blue cornflower, so we think that the countries you name are without "national flowers."

1. How many theatres are there in New York? 2. How many in London? 3. In which of these cities is real estate the most valuable? London, New York, Melbourne? BACCARAT.

1. Thirty, including the variety theatres, or vaudevilles, as they prefer to be called, and three are building. 2. Forty-nine, including only the better grade of music halls. 3. We think that small pieces of land in this city have brought higher prices than similar small pieces in London.

Will you please suggest a remedy for the prevention of cistern (drinking) water becoming impure? The particular cistern is about 10 feet deep, 6 feet in diameter, and is bricked and cemented. CROVE.

Cleaning your cistern; leaving it open to the air, with such covering as will prevent surface dirt from blowing into it; dumping a barrel or so of charcoal into it; making it shallower, or increasing its area and not its depth; each and all of these proceedings will help you to some extent. But we think that Dr. Fradden's book, "Drinking Water" (New York city, G. P. Putnam's Sons, 75 cents), will give you further advice, and better.

What titles do officers and enlisted men in the army get, from private up? J. J. S.

Privates have no titles. Corporals and Sergeants are addressed by the title of their grades; enlisted men call Lieutenants by the title of their rank, while other other officers address them as "mister." Captains and Majors are addressed by the titles of their ranks, while Lieutenant-Colonels are addressed by the title of the rank next above theirs, that of Colonel; Colonels are addressed by the title of their rank, while Brigadier-Generals and Major-Generals are addressed as Generals.

Did Garibaldi ever keep a tavern in Cincinnati? The *Newcastle Chronicle*, an English newspaper, has a tale that he did, and that by his urbanity and charming conversation he attracted much custom, and made $25,000—all this in 1837. G. JONES.

In 1834 Garibaldi was exiled from Italy; the next fourteen years he spent principally in South America. He came to this country in 1850 for the first time. This is one of the stories about America, the acceptability of which to the English of all classes makes the spread of education in England so important.

Is a minister compelled by law to marry any couple who swear they are of age and unmarried? G. MACV.

No. A priest of the Roman Catholic Church will not marry two Protestants, he won't marry even a Roman Catholic and a Protestant unless they have a dispensation from the Roman Catholic authorities. Strict churchmen of other churches will not marry persons whom they don't know personally, or those who don't bring introductions of some sort. A woman is of age to marry at 16 in this State.

1. Who is the greatest living tragedian? 2. Which is Booth's best Shakespearian character? 3. Which is the greatest of Shakespeare's plays? 4. In which one is the heaviest acting? R. ADAMS.

1. Now that Barry Sullivan is dead, Booth, or Irving, or Haase, or Salvini, or Possart, or Barnay; it all depends. 2. *Hamlet* is certainly his most famous part. 3. We don't think that any one of authority has decided. 4. In the two parts of Henry IV., and the Merry Wives—Falstaff's in 'em, all three.

"The Rainbow," which M. E. M. wishes to find, ran thus in the second verse:

"I think as I'm gazing those colors to mark,
How o'er the lone mountain where rested the ark
The saved from the flood did their offering eye.
Behold the first rainbow burst over the sky.

"CHORUS.—Oh, sing of the rainbow, the rainbow, the rainbow,
Oh, sing of the rainbow, the promise of God on high." H. F. B.

Evidently H. F. B.'s song is a Sunday school hymn; but F. C. McL. writes that a poem called "The Rainbow" appeared in "Pierpont's Fifth Reader," which was used in schools about forty-five years ago; and another correspondent refers us to "Standard Recitations, No. 2" (New York, M. J. Ivers & Co.), and there we find it, on page 35. This second "Rainbow" is not a Sunday school hymn.

Is West Point on the right or left bank of the Hudson? S.

On the right bank. The banks of a river are right and left looking toward its mouth. Suppose you started out with the very first wave that flowed from Lake Tear of the Clouds to make what we know as the Hudson; there'd be no doubt in your mind as to which was the right bank of the river as you went along; so geographers take the same view that you would take.

What country has the protectorate over Zanzibar? J. S.

Great Britain; that is, Zanzibar is "under the influence" of the Imperial British East Africa Company. Certain parts of the mainland of Africa once claimed by Zanzibar, are under German protection; but the actual protection of any part of the actual Zanzibar is British.

What is the difference in the meaning of the words Jew and Hebrew? C. M. H.

The popular difference nowadays is that Jew implies a certain contempt—probably because of the verb which has been formed from the word—while Hebrew does not. But historically—though authorities differ—the distinction seems to be that Hebrew expresses the race, while Jew or Israelite expresses the religion.

When and where was the first shot of the civil war fired? SECESSION.

At Charleston, Jan. 9, 1861, when the steamer Star of the West, with provisions for Fort Sumpter, was fired on from the South Carolina forts on Morris Island. She was driven back to sea.

1. Where can I get a license as pilot? 2. Where is the red and white flash light, down the harbor, which can be seen from the Battery? D. S. S.

1. Apply to the Board of Pilot Commissioners, whose office is at 24 State street. 2. At Fort Tompkins, an outwork of Fort Wadsworth, on Staten Island.

Is the sil