MUSIC OF INDUSTRY

EACH CITY HAS ITS DOMINANT TONE.

New York Has Varying Song for Different Hours, Expert Says.

Modern poets speak of the music of industry, a grand symphony that rises from loom and forge, from city streets and harvest ripe fields. They tell of the boiler factory's compelling rhythm and point out the beauties of a locomotive exhaust when pulling a freight on an up grade. They would persuade us that the stock ticker purrs a delightful melody, as of crickets in Arcady, and that the clatter of the milk wagon at 4 a. m. contains a germ of harmony related to the grateful honk of the automobile and the refreshing jar of flat wheels on trolley cars. The average man forgives the poet who thus rhapsodizes, because he thinks it is natural for poets to cook the facts to suit themselves and because he is not averse, on general principles, to an optimistic interpretation of his miseries.

"Music?" disgustedly echoed one practical man when the subject was broached to him. "Say, I've heard all the rackets of civilization, and, by George, they're nothing but a gol-dinged, ear-busting, heart-breaking, nervous prostration noise! Take that from me. The orchestra of industry plays like—you know what. There's no more music in it than that Gotter-something of Wagner's arranged for a Chinese orchestra, which I am told they did by substituting frying pans for the violins and lengths of stovepipe for the wind instruments."

However, the practical man is at least half wrong and the poet is at least half right. It is neither metaphor nor hyperbole to speak of the music of industry. Industry is "chock-a-block" with pure musical sounds, and the only trouble is they are generally somewhat mixed and it requires a trained ear to pick out the sounds from the noises. The difference between a musical sound and a noise is in the elements of regularity and speed. Any noise that gets up its gait in a regular way until the vibrations blend in the ear becomes a sound that has its place in the musical scale. It is true there is much anarchy and dissonance in industrial music. But there are many well written passages, and there is an immense possibility of tuning up the industrial orchestra so as to produce a symphonic effect beyond the sublimest dreams of poets. The time may come when a government inspector of music will go about tuning factory and ferryboat whistles to a federal pitch, arranging typewriters in fifths and octaves, causing automobiles to honk the Dead March in "Saul" as a warning to pedestrians, having baton wielding conductors to guide the harmonies of riveters on steel bridges and buildings, supervising the gay or stately melodies produced by labor in every workshop.

HAS "ASSAYED" NOISES.

The present status of the music of industry and civilization has been exhaustively studied by an expert whose discoveries are for the first time here presented to confound the practical and comfort the poetical. The expert, William B. White, editor of the technical department of "The Music Trade Review," has been going up and down the land with a tuning fork and a keen ear, assaying the multitudinous sounds of cities, the harmonies of sawmills and machine shops, the roars of mobs and the shrieks of river traffic on foggy nights. Regardless of danger to his ear drums, he has penetrated into infernos of sound and has scientifically located the fundamental tone and all the host of overtones that fly upward like startled pigeons from the roof of a barn.

Mr. White knows tone as the average man knows where he keeps his cigars. He can recollect almost any industrial tone that he has ever heard and can write it down on the staff. Incidentally he is a music lover and prefers Beethoven to a boiler factory, likewise Tschaikowsky to a thrashing machine. In the following analysis of industrial music by the expert the tones are designated upward from the bass end of the piano, middle C being C3, an octave higher C4, and so on.

The musical tones of large cities, produced by an amalgam of wheels, feet, hoofs, whistles and voices, are generally alike, yet sufficiently distinctive. There is a ground tone a little more than an octave below middle C and a superstructure of higher sounds which are often complex. In the early morning hours there is no fundamental note, only a series of dissonant overtones produced by the festive milk wagon and the street cleaner. As traffic increases New York strives toward musical self-expression, and at midday she bursts into the metropolitan hymn based on the fundamental of A2. An octave above is also heard, then an irregular series of dissonances, shading at the top into an absolute unmusical shriek. Don't blame New York for the shriek; she probably gets hoarse at the climax. The best place to get the ground tone is at Broadway and 23d street, but it might not be advisable to let a policeman catch you with your ear to the pavement at this point.

The quality of Gotham's tones varies immensely. If you seek purity, you must ascend to the tops of office buildings, when most of the dissonances will be purged away. At the top of the Metropolitan tower the high overtones disappear and you hear a clear A2 with a humming organ diapason effect. When the merry revel is on in the white light district at night New York, strangely enough, flats her A2. We would expect her to get shrill and sharp with the rise of hilarity. The reason for the flatting is the great auto traffic, which gives forth a hum like the 32-foot pipe of an organ. Soaring above the hum are Straussian overtones, due to elevated trains and flat wheels on cars. When the pleasure seeking throng has wended homeward from the lobster district A2 becomes natural, gradually rises in the scale, wavers and disappears in the cold gray dawn. Even a tone gets tired and must have some rest after working at top speed for more than a dozen hours.

LONDON'S TONE LOWER.

London's tone, owing to deadening wood pavements, heavy atmosphere and a lack of trolley cars, is placed at D, below New York. Half a century ago our own city had a lower and simpler fundamental, with few overtones. We are all the time getting higher in the scale, along with improvements in civilization, and are developing more dissonance, shrillness and overtones. There is a separate metropolitan tone, which has its lair in the wells of office buildings and the canyon spaces of the business district. This tone, when captured and dissected, was found to be B2 flat, minus a trifle. It is a wolfish sound, like that which used to come down the chimneys of haunted houses.

Chicago has no fundamental tone, declares the expert. She has not yet found herself, musically. She is a chaos and a welter of clattery noises, due to the bunching together of her elevated and surface car systems. Poor Chicago is inarticulate. We suspected it before, but now the fact is established by the fork and ear of a man who knows. But there is still hope. The prairie town has in her the making of A3, which is an octave higher than the New York standard. When her noises amalgamate, she will be quite toney and up in the scale.

Philadelphia is like London, having a deep and perhaps somnolent fundamental. It is a sober sound and the overtones are strictly respectable. Boston is clattery at the first hearing. One might think that it was full of Lawsons. However, an audition from a high point reveals the Boston-ese soul vibrating in unison to a deep note comparatively near New York's. Buffalo is somewhat similar. Washington, when Congress is in session, is said to have such hot notes that they cannot be written on paper without dashes, while the undertones are scandalous and the overtones often get into a free fight.

Parades and celebrations with plenty of cheering yield a shrill tone way up in the scale—D4. This is the twelfth above the metropolitan fundamental. Anger makes a crowd rumble downward with a low intensity, but great content of sound. A lively political meeting, or a mob bent on lynching, produce a sound which is about a fifth below A2, or D1. There are great possibilities in the using of this knowledge to maintain law and order. Suppose that sheriffs and policemen had tuning forks and ascertained the pitch of a political meeting or a riotous gathering. F sharp would be justification for calling out the militia, and E flat, or shortly before, would be time for the police to draw clubs.

NOT MUSIC OF THE SPHERES.

Among industrial symphonies, steel works which make rails out of ingots almost take the cake. When the white-hot ingot is drawn through the rollers there is a high screaming shriek, as if one hundred prime donne were executing Wagner's "Ride of the Valkyries." There is a deep fundamental and a harsh, hideous seesaw between A5 and the fourth below. The auditor feels as if his ear drums were being operated on without stovaine. This is certainly not the music of the spheres nor the most attractive kind of industrial harmony. Nor is it possible to improve it, as in the case of a boiler factory, whose discontinuous resonances might well be welded by a conductor into a tolerable, if rather deafening, tone poem. If a number of boilers were made at once and the men swung their hammers in unison, a low fundamental and sundry overtones would be produced. A careful scoring of light and heavy hammers would put Verdi's anvil chorus in the shade.

The case is similar with the air hammers used by riveters on steel office structures. When the tapping of several hammers chances to coincide there is a faint fundamental of C1, surmounted by a multitude of clattery overtones. Generally the hammers are too slow, making only about ten strokes a second, while twenty strokes a second are needed to produce a musical sound. The lowest tone on the piano consists of twenty-seven vibrations to the second. However, when the merry riveters' hammers overlap the sounds coalesce to the ear, though briefly, and a musical sound is heard. The ear catches a note that is a short in duration as one-sixteenth of a second.

The exhaust of a locomotive at the start is only a series of shocks, but it becomes A2 when the train is speeding, and there are intermingled overtones of the wheels a fifth above the fundamental. A long Pullman train has a deep tone, while a light fast train ascends the scale. The click of its rails is not strictly musical, but it is a permissible part of the industrial instrumentation. Every one has noticed the pleasing variation in the sound of engine whistles approaching and receding.

A printing press at full speed has a fundamental tone of D2, and a strong fifth above, which is A3. It is said that there are dissonant overtones and a brassy color of sound when yellow newspapers are being printed. Telegraph offices have a low fundamental of A3 beneath the multitudinous clicking and the clatter of dissonant overtones. In telephone offices there is a vocal effect seesawing between G2 and C4, due to the mezzo-soprano range of the girl operatives. Sometimes a subscriber makes a complaint over the wires, and then there are overtones that reach high C or even fall off the upper end of the scale.

THE GRASS CUTTER'S NOTE.

While the farmer, seated on his horse-drawn grass cutter, trolls a ditty on the joys of bucolic life, his machine contributes the note in C4 sharp. In harvest time a deeper and more emotional utterance is afforded by the reaping machine, the same being F3 sharp. The reaper has a tender "vox humana" effect, but when it strikes a rock or gets out of kilter in some way, the farmer spoils the music with his objurgations.

A sawmill is full of music which only needs to be regulated in order to produce an enchanting effect. Every saw has a different tone. The circular saw produces the best continuous musical tone. By counting the revolutions and the number of teeth it is possible to ascertain the exact tone of a saw. However, the thickness of the wood which is being sawed makes a difference in the tone production. As the teeth negotiate the thin end of a stick of wood and travel down to the thick end, the note descends a full octave from C4 to C3. The band saw, which generally goes faster than the circular saw, has a tone around B2. The total music of a sawmill is a deep hum around C1, with remarkable partial tones of the second, the third and the fourth. It is the throbbing of the engines which gives the deep fundamental. The partials are stronger than the ground tone. There is a series of farcical overtone dissonances, sounding like waw-waw-waw-waw, or the wails of a lovelorn catamount, which have no harmonic relation to the musical foundation.

Silk or cotton mills produce noise rather than music. There is an immense number of small irregular shocks, caused by the striking of the shuttles at the ends of the loom frames. The resultant of the sounds is faint.

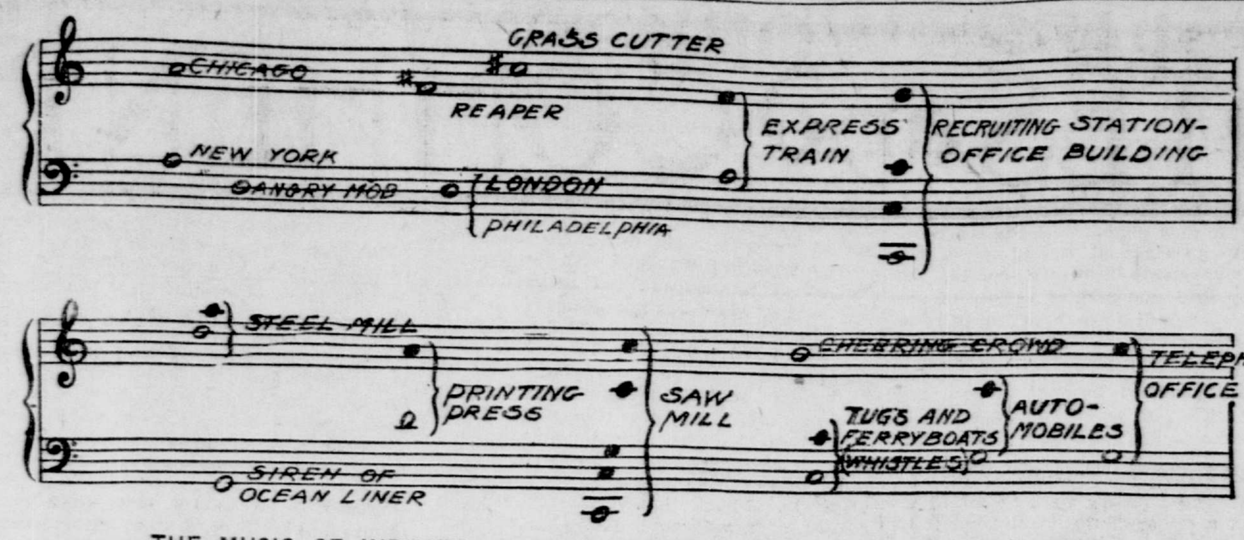
Tug and ferryboat whistles range from C2 to C3, while the big sirens on ocean liners used in fogs shake the atmosphere with the profound tone of G1. The hoarse bellow or boom of the siren is an unforgettable sound. When the metropolitan whistles ashore and afloat get together there is a resultant which comes to A2 flat.

Automobiles usually limit themselves to a vigorous cough, but a six-cylinder high grade machine when speeding develops a low purr, going down to G2. Here again is a chance for the Police Department to catch lawbreakers with a tuning fork. The department sleuths could be equipped with forks which would vibrate only in response to an unlawful speeding of an automobile. A device might be arranged to register automatically the fork's vibrations on a sheet of paper, and then the only thing left for the defendant's lawyer would be to heckle the policeman on his knowledge of Helmholtzian theory. The wheels of the automobile are noiseless. Automobile horns usually have a toneless bark, but there are some horns arranged in musical fifths—C1, G1, D2 and A2. It would be well to have all horns arranged to C1, which gives a splendid "Woof!" Some day the law may require automobile horns to enunciate distinctive chords for identification of the machine and edification of the public ear. Low major chords could be assigned to automobile trucks, the middle register to taxicabs, minor chords to private machines, and so on.

The note of the aeroplane is at present about the same as that of the automobile, but no doubt in the future the voice of the flyer will be differentiated, so that pedestrians will know whether they are going to be run down or dropped on.

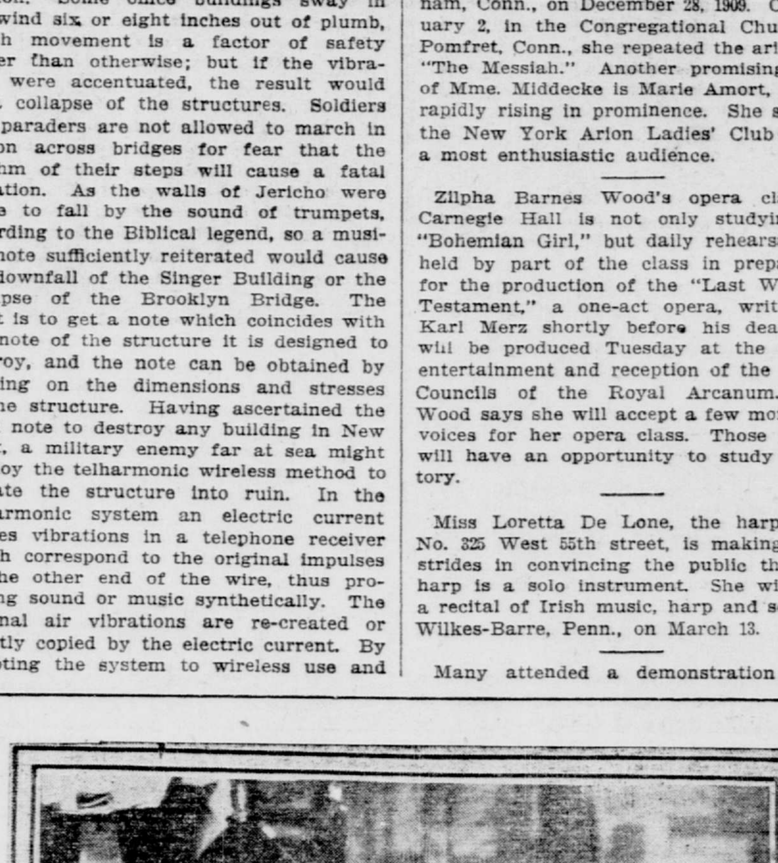
There is a startling engine of war and anarchistic destruction in the projection of musical notes tuned to the potential vibratory quality of buildings and bridges. Every structure has a certain rate of vibration. Some office buildings sway in the wind six or eight inches out of plumb, which movement is a factor of safety rather than otherwise; but if the vibration were accentuated, the result would be a collapse of the structures. Soldiers and paraders are not allowed to march in unison across bridges for fear that the rhythm of their steps will cause a fatal vibration. As the walls of Jericho were made to fall by the sound of trumpets, according to the Biblical legend, so a musical note sufficiently reiterated would cause the downfall of the Singer Building or the collapse of the Brooklyn Bridge. The point is to get a note which coincides with the note of the structure it is designed to destroy, and the note can be obtained by figuring on the dimensions and stresses of the structure. Having ascertained the fatal note to destroy any building in New York, a military enemy far at sea might employ the telharmonic wireless method to vibrate the structure into ruin. In the telharmonic system an electric current causes vibrations in a telephone receiver which correspond to the original impulses at the other end of the wire, thus producing sound or music synthetically. The original air vibrations are re-created or exactly copied by the electric current. By adapting the system to wireless use and eliminating the present receiving method, the musical assault would be perfected.

The most likely enemy to attack us in this way would be a musical nation like the Germans. When New York begins to tremble under their bombardment of sharps and flats, the government will probably commandeer all the orchestras and opera singers in town—declining to make exceptions for German artists—and assembling them at Battery Park will make them get busy with any and all kinds of music, so as to checkmate the hostile vibrations and save the country from invasion.



THE MUSIC OF INDUSTRY SCORED FOR THE PIANO BY WILLIAM B. WHITE.

Note.—White notes represent ground tones or fundamentals. Black notes represent simultaneous overtones or partials. Partials are always feeble relatively to ground tones. In testing these tones with a piano, try the fundamentals with loud pedal held down. When both fundamentals and overtones are indicated, play fundamental first with loud pedal down, and then, still holding down pedal, touch overtones lightly staccato.



WILLIAM B. WHITE SCORING THE MUSIC OF INDUSTRY FOR THE BENEFIT OF TRIBUNE READERS.

STUDIO NOTES.

Henry Liff and his orchestra played at a ball at the Women's Club in Orange on Wednesday evening. This same orchestra will be heard at the Waldorf on January 28, at the reception of the Daughters of Ohio.

Nina Mills, soprano, who sang at the Madison Avenue Presbyterian Church last year, spent the summer in Italy. While in Sorento she gave an afternoon recital of French, Italian and English songs at the villa of Mrs. F. Marion Crawford. Miss Mills will be heard in New York this winter at several concerts.

Mr. and Mrs. Frederick Martin, studio No. 515 West 124th street, are having a successful season with their teaching and concert work. The success of Mr. Martin in "The Messiah" in Boston on December 19; in Green Bay, Wis., December 7, and in Pittsburg December 30, is a matter of record in the papers of those cities.

F. W. Reisberg has resumed his weekly visits to the Hotchkiss School, Lakeville, Conn., where he is professor of piano. He has a good sized class of boys, some of whom, he says, have decided talent for piano playing and composition.

Mrs. Hervor Torpadie, vocal instructor, of Carnegie Hall, is having a busy season this year. She has in her class many newcomers, some of whom are well known professionals.

Miss Lillian Beddard, the English actress, who has made a specialty of Shakespearian parts in London, England; South Africa and Australia, has established a Shakespearian Academy at No. 60 West 76th street, where she will coach pupils for the professional stage, especially in Shakespearian parts. Miss Beddard studied under the late John Ryder.

On Wednesday evening, January 12, Mme. Florence Mulford invited several of her pupils to listen to a rehearsal of the "Persian Garden," sung by four of her pupils, which will be given in the Halsey Street Methodist Episcopal Church next month. The rehearsal was highly successful. The quartet consists of Miss Lydia Koehler, soprano; Miss Grayce Stetler, alto; Harry Biggin, tenor, and Charles Hendler, bass. After the rehearsal songs were sung by Misses Marion Rice, Elsa Wackenhuth, Mabel Sauer, Isabel Warrender and Helen McDermid. All these young singers hold church positions.

Mme. Josefa Middecke, the well known singing teacher, of No. 161 West 80th street, has reason for congratulation. Her pupil, Agnes Fuller Armington, sang with success at an entertainment given by the Daughters of the American Revolution in Putnam, Conn., on December 28, 1909. On January 2, in the Congregational Church in Pomfret, Conn., she repeated the aria from "The Messiah." Another promising pupil of Mme. Middecke is Marie Amort, who is rapidly rising in prominence. She sang at the New York Arion Ladies' Club before a most enthusiastic audience.

Zilpha Barnes Wood's opera class at Carnegie Hall is not only studying the "Bohemian Girl," but daily rehearsals are held by part of the class in preparation for the production of the "Last Will and Testament," a one-act opera, written by Karl Merz shortly before his death. It will be produced Tuesday at the annual entertainment and reception of the United Councils of the Royal Arcanum. Miss Wood says she will accept a few more good voices for her opera class. Those joining will have an opportunity to study repertory.

Miss Loretta De Lone, the harpist, of No. 325 West 55th street, is making rapid strides in convincing the public that the harp is a solo instrument. She will give a recital of Irish music, harp and song, in Wilkes-Barre, Penn., on March 13.

Many attended a demonstration given with the apparatus used in the Dunning system of improved music study for beginners by the originator, Mrs. Carrie Louise Dunning, at the Hotel Empire, 63d street and Broadway, on Friday evening. The demonstration was much enjoyed. Another will be given to-morrow afternoon at 3.

Mme. Dora Wiley Tennis, known here and abroad as the "Sweet Singer of Maine," reports a very successful season at her studio, No. 116 West 84th street. Although in New York only about a year, she has a large class. Her work includes voice culture, pure tone, perfect breath control, distinct enunciation and extension of range, and rapid improvement is said to be assured.

Miss Helen True Winslow, who is planning to give a musical the first week in February, is busy these days at her studio, No. 470 West 157th street. Miss Winslow was recently appointed treasurer of the National Association of Teachers of Singing at their annual meeting.

On January 13 the Southern Dutchess Choral Union, of which Dr. Ion A. Jackson, of Carnegie Hall, is director, gave Gounod's "Faust" in concert form at Fishkill-on-the-Hudson, with the following soloists: Edith Chapman Goold, John Young and Frank Croxton. At this concert Miss Edith Crawshaw, a pupil of Dr. Jackson, made her debut in the part of Siebel. Dr. Jackson's schedule of dates for January and February includes: January 18, Bloomsburg, Penn.; January 21, Greenwich, Conn.; January 26, Meriden, Conn.; February 5, Lawrenceville, N. J.; February 16, Easton, Penn.

B. Margaret Hoberg, concert pianist, teacher and composer, of No. 3 West 92d street, recently completed a new song, "Sleep," written as a prelude or companion piece for "The Awakening." It was sung on January 17 at the Indiana Authors' Day, at the Hotel Astor. Miss Hoberg's "Song of Peace," text by Dr. H. Emery Jones, is now registered in the Library of Music, at Washington. Many professional singers are said to be making use of Miss Hoberg's songs.

Henry Seymour Schweitzer and Kate Elizabeth Fox, pupils of William C. Carl, will give several organ recitals next week in the series under the auspices of the American Guild of Organists. Harold Vincent Milligan, another pupil of Mr. Carl, has returned from Delaware, where he has been giving concerts.

Cecile M. Behrens has sent out invitations for a recital to be given by her pupil, Miss Angela Gianelli, assisted by Freeman Wright, of London, barytone, next Wednesday, at 11 o'clock a. m., in the "White and Gold Hall" of the Plaza Hotel. Miss Gianelli, who is only fifteen years old, is said to have been recommended by Teresa Carreño and Wassily Safonoff. Miss Behrens gave a musical at her studio yesterday in Carnegie Hall, which was largely attended. Several well known artists took part besides Miss Behrens, who played several numbers.

The classic dancing demonstration which was given by Miss Dora Brown, assisted by Miss Caroline A. Baxter and Miss Emily A. O'Keefe, at the Master Music Studios, M. Duble-Scheele, director, No. 2789 Broadway, on Friday evening, January 14, was considered a great success. For those who had not the pleasure of attending, announcement is made that the demonstration will be repeated on Saturday evening, January 29, at the same place. A large attendance is expected.

The children of the primary and intermediate departments of Miss Rounds's school appeared in the play "Is Santa Claus a Fraud?" at Memorial Hall, Young Women's Christian Association, Brooklyn, yesterday afternoon. The affair, which was given for charity, was largely attended. The children acted their part with much credit to themselves and their teacher, Miss Rounds.

On January 5 and 19 Walter L. Bogert gave a lecture recital on the folksongs of Germany, France, Ireland, Greece and Russia, at the American Institute of Applied Music (Metropolitan College of Music), No. 212 West 59th street. Mr. Bogert, who is musical director of the People's Institute, announces the following soloists for the coming meetings, which will take place in the large hall of Cooper Union on the dates mentioned: January 23, Mrs. Frances Hewitt Bowne, soprano; January 30, Cecil Fanning, barytone; February 6, Mrs. Adele Laeis Baldwin, contralto; February 13, Horace Britt, 'cello.

HOT WATER FROM ELECTRICITY.

A substitute for the kitchen range as a source of supply for hot water has recently been introduced in England. An iron block, cast round a coil of pipe, is heated by a small electric heater placed in a chamber in its centre. Outside the block is a circular tank containing the water, which in its course through the coil is heated. The electric current for the heater comes from the regular house supply for lighting. As the apparatus stores considerable heat, it may be cut off when the current is required for light without seriously affecting the supply of hot water. On the other hand, the heaters may be permanently connected with the electric main, independent of the light current.—Philadelphia Record.

THE KAISER'S DRINKS.

The Emperor William of Germany, like most hard workers, is extremely abstemious. Of the national beverage, beer, he seldom drinks more than two glasses in the course of the day. Whiskey he rarely touches. The chief steward of the Hamburg-American steamship Hamburg, on which his majesty took a trip, says that he drank one glass of Rhine wine at dinner. At dinners where the Emperor is the guest of honor he allows his glass to be filled a second time with champagne, but when the wine is offered him for the third time he places his hand over his glass to show that he does not wish it to be refilled. In summer he seems to favor a long drink of orangeade.—The Gentlewoman.

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