

Spectrum Analysis

From a resume in the Tribune of Roscoe's late work.

In 1859, two German chemists, Bunsen and Kirchhoff, working together, discovered that each chemical element, when burning in a flame, emits a light which, when passed through a prism and forming a spectrum, has lines or marks peculiar to itself. These lines might be taken, therefore, as new properties of the elements, and could be used to distinguish and detect them. It is only in the condition of vapor that the elements produce their peculiar lines. If platinum wire, a solid, be heated to whiteness, and its light passed through a prism, it gives a continuous spectrum; but if platinum be vaporized by the electric current, its spectrum becomes broken, and there is a series of bright lines separated by varying intervals of darkness. If zinc be vaporized, it gives beautiful bands of red and blue, while vapor of sodium gives two fine yellow lines situated close to each other. A new and most delicate mode of chemical analysis was thus found, and the very first result obtained by it was the discovery of several hitherto unknown chemical elements. Prof. Bunsen in examining the ash left after the evaporation of some mineral water, discovered lines which did not appear to belong to any known element. He then boiled down forty-four tuns of this water, and from the mineral residue he extracted two new metals resembling potash, one of which he named 'Robidium,' because it gave a dark red line, the other 'Caesium,' from its producing a bluish gray line.

The lines produced by the burning vapors of the elements are variously colored, but always bright, with dark interspaces; but in the spectrum of the sun and stars this is exactly reversed, the lines being dark and the spaces bright. Kirchhoff explained this beautifully on the principle of absorption, which we will try to illustrate. If we go into a glass room with a violin and produce a tone by drawing the bow across one of the strings, certain of the glass vessels will be set singing; they will catch up and give out the same musical note which proceeds from the violin. But only those vessels will do this which are capable of vibrating in unison with the string, or of giving out the same note that they receive. In this case the sound of the string is said to be absorbed by the vessels which are capable of emitting only vibrations of the same rate. Supposing we have a candle flame containing sodium vapor, which gives the bright yellow lines in its spectrum. If then we take an electric light, which is of course very much brighter, and containing also sodium vapor, and let it shine through the candle flame, the bright yellow lines do not change their position, but they instantly turn dark. The explanation is that the candle flame absorbed the same rays that it gave out—that is, it stopped the bright sodium rays of the electric light, and, letting all the others pass, the contrast becomes so great in the spectrum that the lines of absorption appear as dark lines. Now in the sun it is supposed that there are two sources of light, an external photosphere, and an inner nucleus of intense brightness, so that the intense light from the inner source undergoes absorption as it passes through the outer sphere and hence the solar lines appear dark. A beautiful verification of this principle is furnished by a discovery of Lockyer and Jansen, that from the very outer edge of the sun, and consequently where we do not get the rays from the nucleus, the solar spectrum gives bright lines; this outer sphere is therefore termed the chromosphere.

The constitution of the sun is now held to be proved by spectrum analysis—that is, we know to a moral certainty that certain elements existing on the earth exist also here. The spectrum of iron vapor, for example, gives six or seven bright lines. If now we place this beside the solar spectrum, the bright lines are found exactly to correspond to a system of dark lines in number, breadth, position and interspaces—a coincidence, that, sixteen of the elements we know upon earth are thus found to exist in the sun. The spectra of the stars have been studied with great assiduity and success by Father Secchi, of Rome, Mr. Huggins, of London, and Mr. Rutherford, of this city. About eighty lines in the spectrum of the star Alderbaran have been mapped and it has been shown to contain sodium, magnesium, hydrogen, bismuth, tellurium, antimony and mercury, while Sirius gives indications of the presence of sodium, magnesium, iron and hydrogen.

But the uses of spectrum analysis are not confined to original chemical research; it has practical applications which should not be passed unnoticed. In the Bessemer process of converting cast-iron into steel it is of great value. Cast iron differs from steel in containing more carbon, and is made into steel by burning out the carbon by means of a blast of atmospheric air sent through the white hot, molten mass. Five tuns of cast-iron, by this process, are converted in twenty minutes into cast-steel. The success of the operation depends upon the blast being stopped at the right moment, for if discontinued too soon the mass becomes too viscid to be poured out, or, if continued too long, it crumbles under the hammer. By the aid of the spectroscopic appearance and disappearance of the lines in the flame afford an exact index to the progress of the combustion. This instrument is also proving a valuable ally to justice in criminal cases. It detects with unerring certainty even the one-thousandth part of the grain of the red coloring matter of a blood-stain.

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THE WONDERS OF WATER.

The extent to which water mingles with bodies apparently the most solid is truly wonderful. The glittering opal which beauty wears as an ornament is only flint and water. Of every twelve hundred tons of earth which a landlord has in his estate, four hundred are water. The snow-capped summits of our highest mountains have many million tons of water in a solidified form. In every plaster-of-Paris statue which an Italian carries through our streets for sale, there is one pound of water to four pounds of chalk. The air we breathe contains five pounds of water to each cubic foot of its bulk. The potatoes and turnips which are boiled for our dinner have, in their raw state, the one seventy-five per cent, and the other ninety-five per cent, of water. If a man, weighing one hundred and forty pounds, was squeezed in a hydraulic press, seventy pounds of water would run out, the balance being solid matter. A man is, chemically speaking, forty-five pounds of carbon and other elements, with nitrogen diffused through five and a half pailfuls of water, this mingling no less wonderful. A sunflower evaporates one and a quarter pints of water a day, and a cabbage about the same quantity. The sap of plants is the medium through which this mass is conveyed. It forms a delicate pump, up which the water particles run with the rapidity of a swift stream. By the action of the sap various properties may be communicated to the growing plant. Timber in France is, for instance, dyed with the various colors, mixed with water, and sprinkled over the roots of the trees. Dahlias are colored by a similar process.

BEREFT OF REASON BY FRIGHT.

The Galesburg (Ill.) Free Press of Dec. 30th says: A case of sudden or violent fright occurred in our neighboring town of Abingdon on Monday last, which should prove a sad and impressive warning to all who are partial to indulging in practical jokes. It seems from what we can learn, that on that day a party of boys, disguised with hideous masks and grotesque garments, called at the residence of an estimable lady, Mrs. George H. Marshall, in that place. They entered noiselessly at the back door, and succeeded in frightening an infant almost into convulsions. Mrs. M., hearing the horrified screams of her child, immediately hastened to its assistance, to shield and protect it from harm. In hurrying to her child, she suddenly encountered the masked figures, and fell fainting to the floor. She was shortly afterwards found by her friends, and proper remedies were administered, but her revival only witnessed the horrifying fact that she was hopelessly insane. Up to this writing, we regret to say that no lucid intervals have been developed, and the woman, once a happy wife and a proud mother, is now a raving maniac, bereft of reason and cowering in fright.

THE FALLACY OF A WISH.

An enthusiastic religious meeting among the negroes in Blount county, last week, when the mourners bench was crowded with penitents groaning in agony, one of them, a sable damsel of elephantine proportions sprang to her feet, crying: 'Glory hallelujah! Lord bless de Lamb, I've got religion! Lord, if dis nigger had de wings of a June bug, she'd fly right to heaven.' Her enthusiasm was checked at that juncture by a matter-of-fact sister, who raised her head and brought the new convert's thoughts back from the ideal to the real, thusly: 'You fool nigger what do you mean? If you had a June bug's wings don't you know a woodpecker'd gobble you fore you got half a mile?'—Knowville Whig.

The South Carolina Legislature adjourned the other day to see John Robinson's circus. A motion to that effect was made by Mr. DeLarge, the colored leader of the House, in these words: 'Mr. Speaker, de circus hab arrobe, and darfore I moves dat we adjourn'—which was done accordingly.

Death of a Free Government.

The following is from a speech delivered by Hon. D. W. Voorhees, of Indiana:

"It is a melancholy spectacle to behold a free Government die. The world, it is true, is filled with evidence of decay. All nature speaks the voice of dissolution, and the highway of history and of life is strewn with the wrecks which time, the great despoiler, has made. But the hope of the future, bright visions of reviving glory, are no where denied to the heart of man, save as he gazes on the downfall of legal liberty. He listens sorrowfully to the autumn winds as they sigh through dismantled forests, but he knows that their breath will be soft and vernal in the Spring, and that the dead flowers and withered foliage will blossom and bloom again. He sees the sky overcast with the angry frown of the tempest, but he knows that the sun will re-appear, and the emblazon of God cannot perish. Man himself, this strange connecting link between dust and Deity, totters wearily onward under the weight of years and pain, toward the tomb, but how briefly his life lingers around the dismal spot. It is filled with tears and grief, and the willow and the cypress gather around it with their loving and mournful embrace. And is this all? Not so. If a man die shall he not live again? Beyond the grave, in the distant Aiddenn, hope provides an elysium of the soil, where the mortal assumes immortality and life becomes an endless splendor. But where, sir, in all the dreary regions of the past, filled with convulsions, wars and crimes, can you point your finger to the tomb of a free commonwealth on which the angels of reconstruction have ever descended, or from whose sepulchre the stone of despotism has ever been rolled away? Where, in what age, and in what climate, have the reigns of constitutional freedom renewed their youth and gained their lost estate? By whose strong grip has the corpse of the republic once fallen, ever been raised? The merciful Maker, who walked upon the waters and bade the winds be still, left no ordained apostle with power to wrench apart the jaws of national death, and release the victim of despotism. The wail of the heart-broken over the dead is not so sad to me as the realization of this fact. But all history, with a loud, unbroken voice, proclaims it, and the evidence of what the past has been is conclusive to my mind of what the future will be. Whenever in the domain of human conduct a people once possessed of liberty have surrendered those greater gifts of God at the command of the usurper, they have never afterwards proven themselves worthy to regain their forfeited treasure.

SUNSHINE AND CLOUDS.

—Ah! this beautiful world! I sometimes it is all sunshine and gladness, and heaven itself lies not far off, and then it suddenly changes, and the dark and sorrowful, and the clouds shut out the day. In the lives of the saddest of us, there are bright days like this, when we feel as if we could take the great world in our arms. Then come gloomy hours, when the fire will not burn on our hearths, and all without and within is dismal, cold, and dark. Believe me, every heart has its secret sorrows, which the world knows not, and oftentimes we call a man a fool when he is only sad.—Longfellow.

NAPOLEON'S BELIEF.

—Napoleon Bonaparte wrote to General Bertrand: "I know men, and I tell you Jesus Christ was not a man. Alexander, Caesar, Charlemagne, and myself founded Empires. But upon what did we rest the creation of our empires? Upon force. Jesus Christ only founded His empire upon love; and at this hour millions of men would die for Him. If you do not perceive that Jesus Christ is God, very well; then I did wrong to make you a General."

THE DWELLERS ON ONE OF THE STREETS OF MEMPHIS.

were recently startled by loud cries of murder, and when the person from whom the cries proceeded was found, he replied to anxious inquiries, that "being an orphan, having no father or mother, or other kinspeople, and feeling lonely, he concluded to gather a crowd for company."

A WESTERN PHILOGIST HAS DISCOVERED THAT THE NAME OF OMAHA WAS DERIVED FROM A FREQUENT WESTERN EXCLAMATION WITH WHICH THAT REGION WAS FAMILIAR IN THE INDIAN SCALPING DAYS, NAMELY, "OH MY HAH."

A MAN BEING AWAKENED BY THE CAPTAIN OF A PASSENGER BOAT WITH THE ANNOUNCEMENT THAT HE MUST NOT OCCUPY HIS BERTH WITH HIS BOOTS ON, VERY CONSIDERATELY REPLIED, "OH, IT WON'T HURT 'EM; THEY'RE AN OLD PAIR."

Too Many Laws.

"The world is governed too much," is a popular saying, but not worthy of such general acceptance as the fact that there are "too many laws."

A late New York church organ well says that one of the crying evils of the present time is the multiplicity of laws, which fairly bewilder even the practitioners of the profession. We have general laws and special laws, constitutional provisions, and statutes professing to conform thereto; laws which speak in general and universal terms, and laws which enter into details and regulate the particular subject. So numerous are these, and so conflicting the application of them by our courts of justice, that they have become a jest. Yet we hear every day of some new law being proposed to correct an evil which probably springs from the very fact that there are too many laws already, and so the system goes on, one law requiring another. The fewer the laws we have, the better they will be obeyed. The "golden rule," which includes all other laws, is a simple and comprehensive one. It would be well for us if all our laws were based upon it as a model. The father we get away from it, the deeper do we get entangled.

AN IRISHMAN WENT TO LIVE IN SCOTLAND FOR A SHORT TIME, BUT DIDN'T LIKE THE COUNTRY.

"I was sick all the time I was there," said he, "and if I had lived there till this time I'd been dead a year ago."

GOOD POWDER.

A postmaster in Canada had a keg of damaged powder, and to see if it was good for anything he threw a lump into the fire-place. It cost his widow two hundred and fifty dollars to put a new roof on the post-office.

A SCHOOL BOY BEING ASKED BY HIS TEACHER, "OF WHAT IS THE GERMAN DIET CONSISTED?"

"Sour krot, schnapps, lager beer and six cum arouse."

SADDLERY.—J. H. Schram, of this city, is now manufacturing the best Saddle and Harness in the State.

He will have at least 50 sets of all grades, from fine to common, finished and ready for sale next month, and more than that number of Saddles. He is bound to make a trade with any man who wishes to buy of him. He uses both Oregon and California leather in his establishment, and his work bears a most excellent reputation abroad. We hope that citizens of our own county will think of this, when they want any articles in his line.

NOTICE.

THE PEOPLE'S Transportation Company

WILL DISPATCH THEIR STEAMERS FROM OREGON CITY AS FOLLOWS:

FOR PORTLAND: At 7 1/2 A. M., every day, except Sunday. And 1 P. M., every day.

For Salem, Albany and Corvallis: ON MONDAY, TUESDAY, THURSDAY, AND FRIDAY, at 7 o'clock A. M.

And for Dayton: ON MONDAY, WEDNESDAY, & FRIDAY, each week.

A. A. McCULLY, President. Nov. 27th, 1869. [40-1f]

Harvest of 1869!!

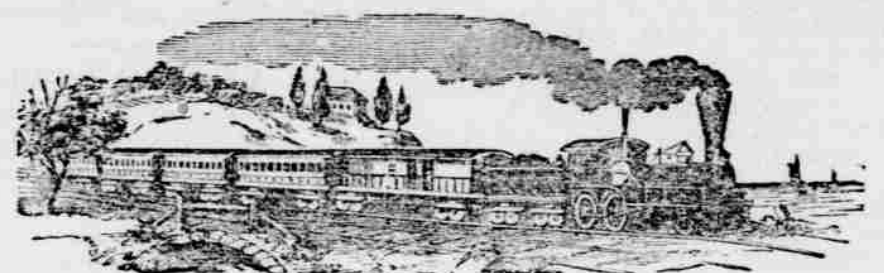
Selling off to Close Business, And no HUMBUG! The Entire Stock!

DRY GOODS. READY-MADE CLOTHING, COATS AND SHOES, Mens' Ladies, Misses' and Children's HATS AND CAPS. Groceries, Crockery Glass and Plated Ware, Paints, Oils, Lamps, Wicks, Chimneys and Burners! Hardware, Cutlery, etc., etc. Has got to be sold

Regardless of Price!

To convince yourself with respect to this matter, call at the old corner. I. SELLING. South of Tape & Co.'s Tin Store, Oregon City.

WHEN THE BELL RINGS LOOK OUT FOR THE LOCOMOTIVE.



Now is the Time to Buy your Goods! While they are going Cheap!

At Cost! For 60 Days Only!

Having purchased the entire Stock of Goods, fixtures, etc. of Messrs. Jacob & Brother, and moved into the stand lately occupied by that firm, I am now better prepared than ever to attend to the wants of my customers, and having a double amount of very desirable goods on hand, I have decided to Sell off at Cost for the next Sixty Days, in order to reduce the stock. In order that all may rest assured of this fact I ask you to call and satisfy yourself. My stock consists, in part of the following articles:

- LADIES DRESS GOODS, BALMORALS, HATS of various descriptions; CLOAKS, such as Circulars and Sacks; KID GLOVES, best quality; HOSIERY; BROWN AND BLEACHED MUSLINS, all widths; BOOTS AND SHOES; HATS AND CAPS; CLOTHING; FINE BLACK DRESS SUITS; CASSIMERE SUITS; SUPERIOR BEAVERS SUITS; BOYS' AND YOUTHS' CLOTHING, all sizes and qualities. A SUIT THAT WILL SUIT ANYBODY—all on the most reasonable terms. Also a large stock of Gents' Furnishing Goods. GROCERIES—A well selected assortment.

S. ACKERMAN. All kinds of Produce Bought. RAGS WANTED.

CHAS. HODGE, CHAS. E. CALEF, GEO. W. SNELL. HODGE, CALEF & Co., DEALERS IN DRUGS and MEDICINES, PAINTS, OILS, AND WINDOW GLASS, VARNISHES, BRUSHES, PAINTERS' Materials, and Druggists' Sundries. 97 Front Street, Portland, Oregon.

112 FRONT STREET, 131 FIRST STREET. Near Morrison Street. Near Yamhill.

KAST & CAHALIN. New Stock of Boots and Shoes. JUST RECEIVED! Best Selection in the City! Comprising all the leading and best brands known, such as Benkert's, Tiroli's, Fogg's, Houghton & Goodrich's, Reed's, Fogg's, and numerous others, of gents' and boys' wear. Also—Mie's, Sieberlich's, Gott's, San Francisco and custom-made ladies and children's wear.

Our customers and the public in general are invited to call and examine our stock, which we will sell cheaper than ever. P. S.—Boots made to order, and an assortment of four make constantly on hand.

DIRECT IMPORTATIONS!!

NEW AND ELEGANT STYLES OF Bed-Room SUITES.

Just received and placed in the warehouses, HURGEN & SHINDLER! 166, 168, 170, 172 First street, corner of Salmon, PORTLAND, OREGON.

PARLOR SETS IN TERRY. IN PLUSH, AND IN HAIR-CLOTH. New Ornamental Pieces, For the Parlor, Great Assortment of HOUSEHOLD FURNITURE! Lounges and Spring beds.

The trade supplied with goods in original packages, on reasonable terms. HURGEN & SHINDLER.

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BLANK BOOKS RULED and BOUND to any desired pattern. MUSIC BOOKS, MAGAZINES, NEWS-PAPERS, Etc., bound in every variety of style known to the trade. Orders from the country promptly attended to.

Marble Work. A. J. MONROE, Dealer in California, Vermont and Italian Marbles, Obelisks, Monuments, Head and Foot Stones. SALEM OREGON. Mantles and Furniture Marble furnished to order. [23-1]

HOLIDAY PRESENTS, GREAT REDUCTION! IN THE PRICES OF—

Fine Watches! Rich Jewelry!! And Silverware!

B. L. STONE Dealer in Watches & Jewelry, 107 Front Street, Portland, Oregon.

World invite the attention of his friends and the public to his Large and Choice assortment of FINE WATCHES, from the most celebrated makers of E. Howard & Co. Boston; Apelon & Tracey, P. S. Bartlett, Waltham, Mass.; Elgin Watches; Jacob's Self-winding Watches; English Watches and others. Also, a well selected stock of ladies' Watches, of all description and styles, which he would be pleased to show to all who may favor him with a call.

FINE JEWELRY and SOLID SILVER WARE, FANCY ARTICLES, SUITABLE FOR HOLIDAY PRESENTS: Gold and Silver Watches, of different makers; Diamond Pins, Ear-rings, and Finger-rings. Gold Chains, Gold Chatelaine Guards and Watch-chains. Gold Necklaces, Armbands, Crosses and Lockets. Gold breast-pins, Ear-rings, and Finger-rings. Gold Charms and Keys. California Gold Rings and Bohmes' Patent Buckles. Moss Agate Sets, Rings and Cuff Buttons. Wedding Rings made of pure gold, expensive for that purpose. Gold and Silver Thimbles, Opera and Marine Glasses, Pebble Spectacles and Eye-glasses. Solid Silver Napkin Rings, Silver Fruit and Butter Knives. Solid Silver Table and Tea Spoons. Regulators, Seth Thomas Clocks, Marine Clocks, Gilt Galley Clocks, etc.

All the above articles sold Cheap for Cash, and warranted as represented. Particular attention given to repairing and adjusting of Chronometers, Duplex and American Watches.

B. L. STONE, 107 Front Street, Portland, Oregon.

Hende's Photograph Gallery. THE ONLY PLACE IN PORTLAND where you are sure of getting No. 1 Pictures at all times in the best of style, corner of First and Morrison streets, where he is as well prepared to do all kinds of work as any Gallery in Oregon, and will guarantee as good satisfaction for all his work as can be had in the State. Pictures of every kind can be had at short notice. Old Pictures can be copied, enlarged and retouched in the best of style, and sold AT LOWER PRICES THAN ANY OTHER PLACE. 46 1/2

NEW YORK HOTEL, (Deutsche's Galleries), No. 17 Front Street, opposite the Mail Steamship landing, Portland, Oregon.

H. ROTHSCH, J. J. WILKENS, PROPRIETORS. Board per Week..... \$5.00 " " " with Lodging..... 6.00 " " " Day..... 1.00

COSMOPOLITAN HOTEL, FORMERLY ABBIGON'S, FRONT ST., PORTLAND. W. R. SEWALL and J. B. SPRENGER, PROPRIETORS.

The Proprietors of this well known House having superior accommodations, guarantee entire satisfaction to all guests. The Hotel Coach will be in attendance to convey passengers and baggage to and from the Hotel, free of charge. (401f Office Oregon and California Stage Co.

S. D. SMITH, GEO. B. COOK. The OCCIDENTAL, FORMERLY WESTERN HOTEL, Cor. First and Morrison Streets, PORTLAND, OREGON.

Messrs. Smith & Cook have taken this well known House, refitted and refurnished it throughout in the best of style, and added thirty more pleasant rooms, making it by far the best Hotel in Portland. A call from the traveling public will satisfy them that the above statements are true. SMITH & COOK, Proprietors. N. B.—Hot and cold baths attached. 40 1/2

DISSOLUTION. The co-partnership heretofore existing between Jacob Wortman and Thomas R. Fields, under the firm name of Wortman & Fields, was mutually dissolved on the 1st day of November, 1869. All persons knowing themselves indebted to said firm are requested to come forward and make immediate payment, or their accounts will pass into the hands of a proper officer for collection. The former will be found at the Postoffice—the latter at the old stand. Please come forward, gentlemen, as our business must be settled up. JACOB WORTMAN, THOS. FIELDS. January 18th, 1870. 11-3w

FINAL SETTLEMENT. In the matter of the estate of Frederick Charman deceased.—In the County Court of Clackamas County, State of Oregon. Notice is hereby given that Arthur Warner, the Administrator of the estate of Frederick Charman, deceased, has rendered for settlement, and filed in said Court, his final account of his Administration of the individual estate of said deceased; and that Monday, the Seventh (7th) day of February, A. D. 1870, being a day of a regular term of said Court, to-wit: of the February term, A. D. 1870, has been duly appointed by the said Court, for the hearing of objections to such final account, and the settlement thereof. By order of said Court. Attest: January 4th, 1870.—J. M. FRAZER, County Clerk. 11-3w

BARLOW IN THE HOTEL Business Again. HAVING TAKEN GEO. A. SHEPPARD as co-partner in the business, and leased the celebrated CLIFF HOUSE, of Oregon City, for the term of one year, we would say to the public, come on, we are ready for you, and will accommodate you to the best of our ability. BARLOW & SHEPPARD. August 21-1f.

C. H. MYERS, PLUMBING, GAS & STEAM Fitting Establishment, No. 110 First Street, PORTLAND

JUST RECEIVED, per Schooner ADELINA ELWOOD, From the celebrated Factory of Messrs. Rumsey & Co., Schenectady, New York.

PUMPS OF ENTIRELY NEW PATENT, in Design Style, Finish and economy, SUPERIOR TO ALL OFFERED IN THIS MARKET, Comprising: CISTERN PUMPS, All sizes for lead or iron pipe; PITCHER PUMPS, All sizes; BASE AND SIDE FORCE PUMPS; ENGINE WELLS PUMPS, For deep wells; YARD WELL PUMPS, AMALGAM BELLS, for Steamboats, Factories, Churches, etc. POINTS, for Drive wells; Hotels, public buildings, and private residences heated with the latest improvements in steam or hot air apparatus. I invite citizens generally to call and examine my stock, which has been selected with great care, and especial attention given to the wants of this market. C. H. MYERS, 110 Front street, Portland, Oregon

OREGON BAKERY! F. OPITZ, PROPRIETOR, FIRST STREET, PORTLAND, Bt Washington and Stark sts. MANUFACTURER OF ALL KINDS AND QUALITIES OF CRACKERS! BREAD, CAKES AND PASTRY CRACKERS Will always be sold below San Francisco prices. All orders promptly attended to. OREGON BAKERY, First st., Portland, Oregon.