

SCIENCE AND INVENTION.

A RADIUM ACCUMULATOR.

Italian Scientist Discoverer of an Important Process.

The presence in certain mineral springs of radium or some other radioactive substance was demonstrated some time ago, and an Italian scientist now says that he can extract this substance from water and store it in an accumulator. The Literary Digest relates from the Corriere della Sera (Milan) the following description of the process:

"Prof. Batelli observed that the mineral springs of San Giuliano, near Pisa, were strongly radioactive, and he decided to try to isolate the emanation; his idea was to obtain the substance directly from the water, and for this purpose he erected a laboratory at the springs. In this laboratory we find first a pump which produces a vacuum in a receptacle situated about 30 feet above the level of the spring water; when the water enters this receptacle the gas in solution escapes, and with it the radioactive substance. The water then passes off by a discharge tube, and a new supply enters below. There is thus a continual current of water flow-

ing through the receptacle while the gas passes off into a gasometer. . . . The gas is composed almost entirely of carbonic anhydride and nitrogen mixed with radium emanation, and to isolate the latter from the anhydride another operation, partly physical and partly chemical, is necessary. The physical operation consists in liquefying the gas by compressing it in a brass receptacle, and in then drawing it off by a stop-cock. There remains, however, a quantity of anhydride in a gaseous form, and in order to get rid of this completely it

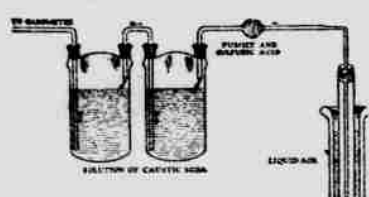
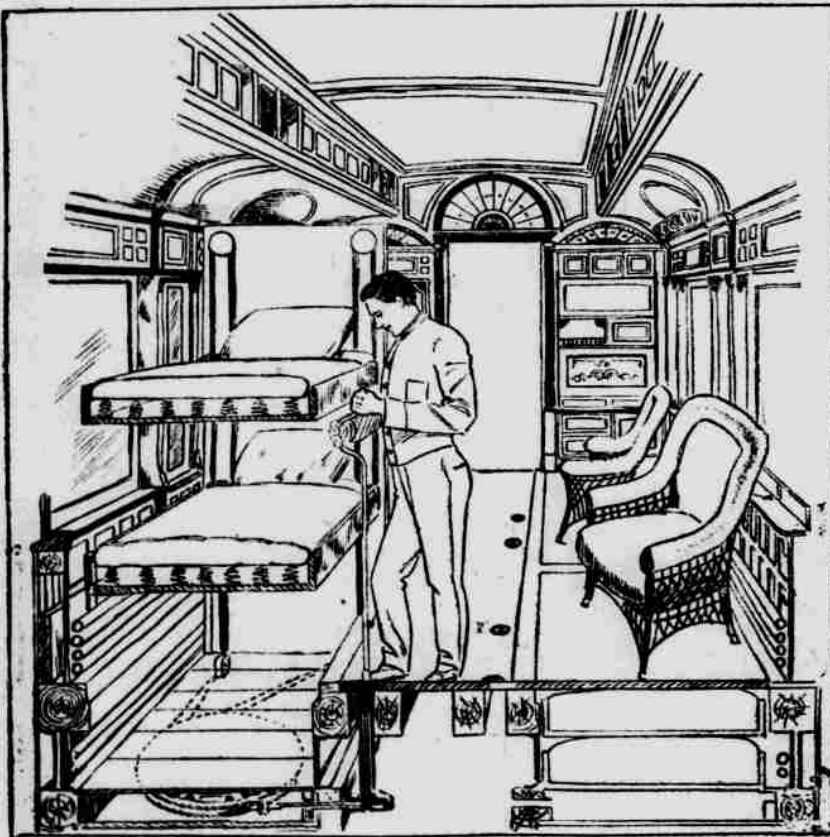


Diagram of the Radium Accumulator.

is passed through bottles containing caustic soda in solution. The gas is then filtered through pumice soaked in sulphuric acid, which attracts the water, and lastly it is injected into a bath of liquid air. At the low temperature of the liquid air the radium emanation is liquefied and the nitrogen passes off by a tube."

The Corriere says further that the presence of the radium is revealed by the green fluorescence of the zinc sulphide in the condensing tube, and that in the dark the light from the tube can be seen for a long distance.

Sleeping Car With Berths Under Floor



Raising the Berths.

A radical change in the construction of sleeping cars is proposed, which will afford all the room and comfort of a parlor car during the day with plenty of light, and better ventilation at night. In this car the berths are entirely below the floor during the day, the space being occupied by comfortable arm chairs which may be moved about as desired. In making up a berth the chairs are removed and tray doors are raised which become the partitions between the sections, and the porter by means of a sprocket raises one or both berths into position. The berths lock securely at any desired height. The company intends to make no charge for an upper berth when it is not occupied, and in such event only one berth is raised above the floor, leaving a room unobstructed to the ceiling of the car.

The occupant can have his berth at whatever height he desires, like a low or high bed, says Railway and Locomotive Engineering. The new plan enables the porter to make up or put away the berths in less time than by the present system in sleeping cars. In the day, when the beds are down out of sight below the closed

up floor, a current of pure air is allowed to get at the beds all the time. It passes through dustproof



Berth Raised and Made Up.

screens, and the beds get an all-day airing, and at night are sweet and clean, and moreover, they are made up and ready for use the moment they are wanted.

LIFE COUNTERFEITED.

Wonderful Results Obtained by Means of Artificial Devices.

Life has been so nearly counterfeited in recent experiments that it is almost impossible to detect any difference between the forms manufactured in the chemist's laboratory and the actual organisms of life, according to Dr. Alfred Gradenwitz, whose article in the Technical World Magazine, entitled "Life Artificially Counterfeited," presents a very able resume of what biologists have recently been able to accomplish towards producing life by artificial means. He describes the experiments of Dr. Stadelmann, who, by the action of electricity on certain chemical compounds, has produced many curious forms which closely resemble organic structures. Photographs of these forms are reproduced with the article. Dr. Gradenwitz not only tells of the results which Dr. Stadelmann has accomplished, but describes how he came to discover the process, and tells other interesting stories about scientists in their search for the answer to the great question which has puzzled man from the beginning of time—can life be produced artificially?

Alcohol in Bread.

There has been much discussion about the quantity of alcohol contained in ordinary bread as the result of the fermentative process to which it is subjected before baking. Evidently the quantity is small, says the Youth's Companion, but until recently, it would appear, chemists have not succeeded in accurately measuring it. Now, however, it is announced that D. O. Pohl, by an elaborate process based upon the distillation of the bread to be tested in a Papin digester, has ascertained that ordinary bread normally contains .0753 of a gram of alcohol for every 100 grams of bread, or a little more than seven parts in 10,000. It is well to be precise even in small things.

Stephenson's "Invicta."

Stephenson's old "Invicta" locomotive, which seventy years ago used to run between Canterbury and Whitstable, was formally unveiled at Canterbury recently by Sir David Salomons, who presented this interesting railway relic to the town council.

Names Mountain Peaks.

The Duke of Abruzzi has named the three highest peaks of Mount Ruvenzori after Queen Margherita, Queen Alexandra, and King Leopold.

JOURNAL IS UNIQUE

DIMINUTIVE PERIODICAL PUBLISHED AT WASHINGTON.

"Postal Information" Has No Subscription List and No Paid Advertisements, But It is Widely Circulated and Read.

There is a little newspaper published in Washington which modestly lays no claim to having the largest circulation in the city, or, in fact, to any circulation at all, neither does it assert that as an advertising medium its columns will be found of value to our merchants, for no paid advertisements are received, yet it goes right on coming out every week and doing business at the same old stand. The name of this unique and diminutive periodical, as there are but two or three like it in the United States, is Postal Information, and it sees the light every Saturday in the city post office. Postal Information is scarcely a year old, and though its exchange list can be counted on the hand, and it has no purchase price, it nevertheless is a thriving youngster in the field of Washington journalism, and its managers are not worried over the ever-present question of a bonafide, guaranteed, paid circulation.

Some time ago a small appropriation was obtained, and a plant sufficiently large to get out a folio eight and a half by eleven inches was installed in the basement of the registration division of the city post office. Every Saturday Postal Information "goes to press," being run off on a small electric motor press and set up a day or so previously by one of the employees of the office who understands the work. While some of its matter is "standing," yet much of it is new weekly, and altogether it presents a very smart and up-to-date appearance.

"We have found this little paper of much service to the officers and employees of the Washington city post office and its stations, for whose benefit Postal Information is published," said an official of the city post office.

"We run off weekly about 150 copies, distributing them among the employees of the office where they may be of ready access to all employees, and sending copies to the various stations throughout the city, the respective employees in these stations being expected to read it weekly, as it may be used by the postmaster to convey certain notices and orders affecting the service in the city to their attention.

"Washington is now one of the larger post offices in the service, having incorporated the various towns within the District in its jurisdiction, with ten named stations, half a dozen or so lettered stations, 64 numbered stations, doing a business of about \$1,300,000 annually and ranking third in the per capita use of the mails. It has a regiment of employees numbering about 1,300 in all.

"Very often the employees of other post offices wish to secure transfer to the Washington city post office, and vice versa, and where these applications come to our notice we insert paragraphs in Postal Information giving the name of the clerk, the post office at which he or she may be stationed and the grade and salary. Any clerk who may be interested may then address a communication to the postmaster, and frequently the exchange is effected. These requests for transfer to our office come from all over the country, and we have on file now one from as far south as Portsmouth, Va., from Boston, Mass., on the north, and Lincoln, Neb., on the west.

"All offenses committed by and penalties imposed upon employees for infraction of the rules are also given weekly, as they serve as reminders to the entire force, as in the instances of carriers being derelict in reporting for duty or for failure to record time. All recent fraud orders issued by the department against such concerns are weekly enumerated by name and address, etc., and would-be money-order purchasers and those who would send registered letters to such firms are warned by the postal clerks. All orders of the Postmaster General and his assistants which it is desired to call to the attention of our force are also published.

"A similar little folio of postal information is published in Philadelphia, Pa., under the title of the Post Office News, and the New York office gets out another along the same lines which is called the Official Circular."

Real Phonetic Spelling.

Phonetic spelling seems to be gaining in popularity everywhere, and the announcement that the reforms would be adopted in the district government probably had much to do with the plan followed by a dusky "citizenship" of Willow Tree alley in making application to the commissioners for a certain position. Her letter speaks for itself: "District Commissions,

"Dear Sir I noticed that you all might be kneding some femail help and not nowing weather you all had ingaged some one or not I thought I would ask you all if it could be possible to allow me the pleasure as I wont work this will be my first time working out and the reason I have not my mother keeps a little store in willow tree court and it has kept me quite bizzzy until now and it is so many stores around in this court until it makes business very dull and I am married and have two children to pervide for and I can give you the best repastation from good business eldersons I hope you all will help one who wants to get along earnest."—Washington Star.

SAILORS AND THE "WIRELESS."

Officials Now Keep Close Tab on Vessels' Movements.

All sorts of things can be turned to all sorts of uses, and an additional illustration in this line was given when wireless telegraphy was used to help out the building of the House and Senate office building near the Capitol. Mr. Elliott Woods, the superintendent of the Capitol, and who has charge of the construction of the two new office buildings, is regarded as an expert in wireless telegraphy. There is one of the finest wireless plants in the United States in the Senate laboratory, and the relations between this plant, which is Mr. Woods', and the regular plants is cordial.

These was a much wanted cargo of stone for the House office building missing. It was needed to get up the B street front of the building and it was known that it had left New York and started down the coast. There had been bad weather and there was no telling what had happened to the flotilla and no way of getting it out at sea. So the wireless plant was called into requisition and with the sanction of the Washington navy yard the stone cargo was likely to be sighted. Henlopen, Cape Henry and the other points were all notified to keep a lookout for the stone cargo and report to Washington if it were sighted.

Cape Henry was the first to pick it up and reported that the boat had been having trouble with the weather, but was then off the capes. Sure enough, next morning the boat reached Washington and the building was going on merrily.

Orders have been issued to the captains of the stone boats hereafter to set the international signal when they are passing the wireless stations on the coast and Mr. Woods will thereby be able to keep tab on the vessels' movements all the way from New York without going out of his office on Capitol Hill. And the captain and crew won't be able to put in at any of the coast ports for a quiet rest and a spree even if they want to and as they have been known to do in times past. Truly the wireless is a mighty source of trouble to the one-time independent sea-faring man.

SHOULD BE IN CAPITAL.

Most Appropriate Place for Headquarters of Patriotic Orders.

"All the soldier and other patriotic organizations in this country should have their headquarters in Washington, and eventually they will." This statement was made by Capt. Edward Trenchard of the Army and Navy club and the Aztec club, before the national encampment committee of the United Spanish War Veterans, at the Hotel Regent. Capt. Trenchard was introduced to the assemblage by Capt. Orville G. Victor as one who "is intensely interested in soldiers and their societies."

Continuing, Capt. Trenchard said that even though the national commanders of patriotic organizations be elected from the states, there should be a grand central structure erected in this city in which headquarters of all the associations could be located. He predicted that there would be such a consummation, and requested the Spanish war veterans to push the project along. He said the war with Spain had produced great and lasting results, and gave the American people "an imperial republic" with territory beyond the sea.

"There cannot be too many patriotic associations," declared Capt. Trenchard in conclusion. "They are the great leaven of true Americanism and are destined eventually to save this country."

Washington Landmarks for Sale.

Love of home in the full acceptance of the word, is not a distinguishing quality of American women, if recent real estate deals in Washington and its vicinity serve as an index. The great-granddaughter of Francis Scott Key has just sold the ancestral home of her family to a traction company, that it may be pulled down for the building of a station. Mrs. Sheridan, widow of "Little Phil," sold the house, which was presented to the warrior by the grateful American nation, for the reason that the locality was getting unfashionable and she wished to move further west. Selling the homes of dead statesmen is epidemic and the houses locally famous through their occupancy by Senator Quay, the Keystone state boss, by Senator William McMillen, of Michigan, and by Robert R. Hitt, of Illinois, are all on the market. The widows of these illustrious men all desire other domiciles.

Expert on Army Clothing.

Prof. W. E. France, editor of the Philadelphia Textile School, and one of the world's recognized experts in wools and woolen fabrics, for a year past has been employed to pass upon every bolt of cloth offered army officers for clothing contracts. He is called to Washington or sent to other centers of army supplies whenever a new clothing contract is being filled. With critical eye and deft touch he passes upon the utility of the proffered cloth and the quartermaster general's department accepts without question his judgment. For a time contractors endeavored to have him removed, but without success. The result of Dr. France's work is that the army is better clothed than ever before.

HER END A MYSTERY

NO ONE KNOWS WHAT BECAME OF OLD ENGINE.

Famous Locomotive "Orange" Is Supposed to Have Found Its Graveyard in the Old Scrap Heap at Susquehanna.

If the scrap heap at Susquehanna could speak it might possibly be able to tell what became of the old engine Orange. No living person seems able to do so. Ed. H. Mott, the historian of the Erie, tried for years to trace her ending after the close of a famous career, but failed. His conclusion was that she ultimately reached the scrap heap in Susquehanna. But of that he was not at all certain. It was the best guess he could make.

The Orange was the fourth locomotive owned by the Erie, the first three being named Eleazer Lord, Piermont and Rockland, respectively.

The Orange had a mate in the Ramapo, all five having been built by William Norris of Philadelphia in 1740-41, at an approximate cost of \$5,000 each. The Orange drew the first train moved over the Erie from Piedmont to Goshen, September 23, 1841, making the trip in three hours, drawing two passenger cars (all the Erie then owned) and two flat cars, Gov. Seward and the members of his staff being passengers. "Joe" Meginness was the engineer.

The Orange was engaged in building the road at intervals all the way from Piedmont to Dunkirk and was used for like work, after having been sold by the Erie, on the Attica & Hornellsville, and the Buffalo, Brad-

MORE KILLED AND INJURED.

Railway Casualties in Fiscal Year 1906 Compared with 1905.

Accident bulletin No. 20, issued by the interstate commerce commission for the three months ended June 30, 1906, shows the total number of casualties to passengers and to employees while on duty to be 16,937, as against 18,296 reported in the preceding three months.

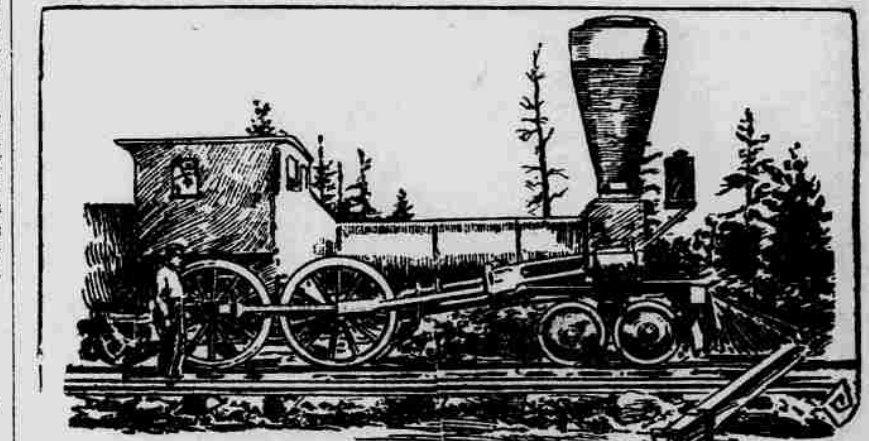
The number of passengers and employees killed in train accidents was 194, as against 274 reported in the preceding three months. The total number of collisions and derailments was 3,103 (1,588 collisions and 1,515 derailments), of which 173 collisions and 153 derailments affected passenger trains. The damage to cars, engines and roadway by these accidents amounted to \$2,373,924.

The number of employees killed in coupling and uncoupling cars and engines was 68, being 16 less than the number reported killed in the previous quarter.

The two most disastrous accidents reported in the present bulletin was a butting collision of passenger trains that killed 10 passengers and employees, and one derailment, killing nine passengers.

The total number of persons killed recorded in this bulletin is less than in the last preceding quarter, but is more than in the corresponding quarter of 1905. The same is true as to the number of employees killed in coupling accidents. In train accidents there is a gratifying diminution, both in passengers and employees killed, compared with either of the two earlier quarters mentioned.

The bulletin completes the publication of the records of accidents for the year ended June 30, 1906, which



The Orange, as it Looked When Built.

ford & Pittsburg roads. In 1859 she was abandoned on a siding at Carrollton, N. Y. An employee who heard she was to be seized for debt, fired her up and ran her to Bradford, Pa., out of the jurisdiction of New York state officers, and left her on the track there. The next morning she had disappeared. Where she had gone or who took her away was never learned, and an old employe says: "No trace of her has ever been found, so far as I know, and I have made all sorts of inquiries everywhere during the past 40 years. It is supposed that she was run back to Susquehanna in the night—which would have been an easy task in those days. There is a theory that she was broken up in Susquehanna, but that was a rumor that could never be verified. There was no reason why she should have been taken to Susquehanna and none why she should have been broken up, except that she was useless—worn out by hard work."

In 1852 the Orange was taken apart and ferried piecemeal across the Genesee river, put together and used to haul iron to finish the road from Warwick to Attica. She had previously drawn the first train over the Hornellsville & Attica railroad, January 22, 1852, from Hornellsville to Portage, and on August 9 of that same year drew the first train across the completed Portage bridge—then one of the engineering wonders of the world.—Erie Railroad Employees' Magazine.

SOME CAUSES OF ACCIDENTS.

Author Points Out Reasons for Disasters to Train Crews.

Most of the common accidents caused by neglect of the train crew are summarized by Mr. Richardson, in his book, "Railroad Accidents; Their Causes and Prevention," as follows:

- Failure to watch for and observe signals.
- Trains following each other too closely.
- Trains following at too high a rate of speed.
- Failure to protect trains stopped on the main track.
- Cars not being left into clear at sidings.
- Switches being left wrong.
- Lack of caution in time of storm or fog.
- General carelessness.

Most of the injuries to employees caused by their own carelessness are from coupling cars, getting on and off, or falling from trains and engines. Mr. Richards cannot imagine why a brakeman of common sense should stand on a footboard and when the couplers are almost together put his hand in between them, nor why he should stand in the middle of the track and wait for a car or engine to approach and then step on the footboard, or brakebeam, when by stepping to one side he could get on in safety. Why do men jump on an engine pilot to ride a few feet to make a switch when the engine is going so fast as to be dangerous?

show an increase of 546 in the total number of employees killed and 10,098 in the number injured, while there is a decrease of 119 in the number of passengers killed and an increase of 1,145 in the number injured, as compared with the number reported for the year ended June 30, 1905. In coupling accidents, which occur wholly to employees, there is an increase of 68 in the total number killed and of 393 in the number injured, as compared with those reported during the preceding year.

Reports received up to October 28 for the year 1906, representing 213,000 miles of track, show an increase of 15,895 in the number of trainmen employed, as compared with the total for 1905.

Had No Use for "Wildcats."

"I'm not a train dispatcher," said Frank Fox of the Union Pacific local freight office, "and I'm glad of it. My brother, however, who visits me occasionally, is dispatcher at Buffalo for the Lackawanna. He told me a yarn the last time he was out here that isn't so bad. It seems that extra trains upon his road were at one time regularly and officially designated as 'wildcats.' The only running orders given to such trains leaving East Buffalo, for example, read 'Wildcat to Elmira.' One day a raw man was being examined for the position of flagman. The examiner asked many questions intended to bring out the applicant's fund of information and his qualifications for the position sought. Finally this question was asked:

"What would you do if you were out flagging and you saw a wildcat approaching?"

"Thoughtfully scratching his head a moment, the candidate for railroad honors replied: 'Shoot if I had a gun, or take to the tall timber.'—Kansas City Star.

Railroad's Eucalyptus Grove.

The Santa Fe has begun planting trees on its land in San Diego county, southern California. The tract is 8,650 acres in extent, and is known as the Rancho San Diego. It is near Del Mar. It will be converted into a eucalyptus grove. About 700 acres a year will be planted for a number of years. The wood will be used for ties and piles. F. P. Hosp, who has charge of this class of work, estimates that \$2,000 worth of timber for ties can be raised on one acre. The red gum will be planted, as this, as well as the sugar and iron bark varieties of eucalyptus, has been shown by experiments in Australia to last more than 25 years underground, while the blue gum will not last more than three years underground.—Railroad Gazette.

Hard and Soft Whistles.

Belgian railway engines are fitted with two whistles, one producing a much softer tone than the other. In order to spare residents nerves, the "soft" whistle is used when the train is passing through towns and railway stations.