the racQuet and tennis club of new york. This is pre-eminently the age of athletics. Within the past twenty-five or thirty years a very remarkable revival in athletics has taken place in this country. Before that time foot ball was practically unknown and unpracticed, lawn tennis had not been invented, would-be bicyclers had nothing to ride, track athletics did not exist, rowing was in its swaddling clothes; in fact, the only full fledged field sport of any prominence was base ball-the national game. Now there are few towns of any size or importance in the more settled parts of the country where there are not base ball, athletic, or tennis clubs. There are, it is said, over 48,000 members of the Bicycle League, and there are thousands of wheelmen who do not belong to any of the regular organizations.
New York City, owing to its peculiar geographical situation, is singularly unfortunate in not having any accessible rural suburbs where athletic sports can be fostered. This defect has, in some respects, been artificially remedied by its handsome athletic clubs. The three leading clubs devoted to athletic sports are the New York Racquet and Tennis Club, with a membership of 800 ; the New York Athletic Club, with a membership of 2,500 ; and the University Athletic Club, which was only started last year, with a membership of 600 , which is rapidly increasing. The Manhattan athletic Club, with a membership of 2,500 , and with one of the most beautiful athletic club houses in the world, has, unfortunately, just been disbanded, owing to financial embarrassment arising out of bad management.
The Racquet and Tennis Club has been selected as the subject of this article for the reason that it is complete and ideal in the way in which the object for which the club was founded has been carried out. Unlike the other clubs mentioned, it was not founded for the purpose of encouraging track athletics, nor is it connected with the cinder path in any way. The club is a luxurious home where the members may shut out the busy world, don their flannels, and after an hour or more of such form of active exercise as may please the individual fancy of the member, may, if tired and exhausted, enjoy the delightful lassitude of a Turkish bath, or, if his mind turns to a less enervating form of treatment, he may take a plunge in the capacious swimming tank. Then a half hour on a divan with, perhaps, a cooling beverage at his elbow, our refreshed athlete is ready to stand on the scales and find how much his exercise has reduced his weight. A book is provided in which each member may make an entry and keep a complete record of the increase or decrease of his avoirdupois. As may be seen by examining the general plan of the club on the first page, the club rooms proper are located on the first and part of the second floor. On the first floor are the pool and billiard rooms, the dining room and two reading rooms, and a reception room. The visitor had better, after visiting them, take the elevator and descend to the basement. Here will be found the bowling alleys and admirable shooting galleries. Also the plunge and the Turkish and Roman bath rooms, all fitted up in white marble and tile. The kitchen and boiler and engine rooms are also situated on this floor. The elevator will now take the visitor to the second floor, where he will pass at once into the lounging room, where the members usually sit while waiting for their turn to secure a court. Large slate slabs are set in the wall about this room, and those who desire to make use of the courts write their names on the slates and they then become entitled to the use of the court according to the order of entry. It is the general practice, however, for plavers of about the same grade or class to try and arrange to play matches together. At the left is the card room and at the right the dressing alcoves, and at the extreme end (see view on front page) are the shower and needle baths. The visitor will find on the next floor a large and completely appointed gymnasium. Here are also the sparring and fencing rooms and the barber shop.
On the top floor will be found perhaps the most interesting feature of the club-the tennis court. A view of this is shown on the front page. In an adjoining room is the fives or squash racquet court. There are two racquet courts, one at each end of the building, and extending at right angles thereto. As they are located at the rear of the building, they do not show in the general plan of the club, which is a section through the front part of the building. These courts are about 60 by 30 feet in size and are very lofty, extending from the second floor to the top of the building. The courts are all lighted from above and have no windows. They are painted black, and the


## SPARRING ROOM

to-day. The game is not only venerable, but it has at times been the favorite game of kings and princes. There was a court at Windsor in the fifteenth century. Francis I. built one adjoining the palace of the Louvre, so did Henry VIII. at Hampton Court, after having appropriated the palace of the favorite cardinal to his own use. Tradition says that Charles I. and Louis XIV. were both tennis players in their youth, and Chaucer before any of these speaks of the use of the ball and racquet.
The interest in the game lies largely in the fact that various qualities of quite a different kind are necessary to a proper development of the sport. The head is called into play more perhaps than the brawn. Tennis the gluten, the fiber
in the ordinary way.
lines or chases indicating where the players are to stand or play are painted orange or green in color. Black has been selected as the most desirable color owing to the fact that the ball stands out from it distinctly and because there can be no delusive shadows. The racquet and ball used in this game are shown in a cut on this page. The handle of the racquet is quite long, giving the player considerable reach, and the ball is so small (about an inch in diameter) and so hard that tremendous speed is imparted to it, and it requires the greatest agility to "take" the ball as it bounds off the hard cement walls. The ball must be played against the wall at the end of the court, and the player who fails to return the ball to that wall


## RACQUET AND TENNIS BATS AND BALLS

loses a point. Galleries for spectators are arranged over the back wall of the court, and in the lower of the two galleries is located the box of the marker, who umpires the game and calls out the score. George Standing, one of the most promising young players in England, has recently came from the Princes Court to take charge of the courts here and to act as instructor and marker.
The tennis court is much larger than the racquet court, being 90 feet long by 30 feet wide, floor measurement. The game of tennis must not be confounded with the game of lawntennis, of which it is, however, the prototype and direct ancestor. Tennis is, perhaps, the most venerable of all athletic games. Although the modern tennis court cannot be traced back perhaps much beyond the period of the Renaissance, still every student knows that a game somewhat in the
nature of tennis (at least a game in which a ball was played against a wall) was indulged in by the ancients. The residence of the Roman patrician was sometimes provided with a court where ball games could be played, but it is not until the middle ages that definite relationship can be traced between the primitive game relationship can be traced between the primitive game
of those rude times and the highly developed sport of
requires accuracy, agility, skill, endurance and a good eye on the one hand and on the other good judgment, perseverance, decision, patience and the faculty of seizing an opportunity quickly or changing one's style of play completely according to the play of one's adversary.
The bat used is rather heavy, and seems to the novice to be a clumsy, unwieldy weapon. The ball is about the size of a lawn tennis ball, but is solid and heavy. The stroke, when properly made, imparts a cut to the ball which makes it die away in the corners f the court or drop suddenly off the back walls.
A marker stands in an alcove in the wall at the middle of the court, near the net, and calls the score, the counting being practically the same as in lawn tennis.
Albert Tompkins, who comes of a tennis family, and had formerly been marker of the Manchester (England) Tennis and Racquet Club, is the instructor and marker.
Tennis is a comparatively new game in this country, and the court pictured on the first page is the first and only one ever built in New York. Owing to the expense of building and maintaining both tennis and racquet courts, these luxuries are naturally confined to the large cities. The only racquet courts in this city, besides those described, are the two courts of the University Athletic Club, formerly belonging to this club before it moved into its present quarters in 1891. The only other racquet courts are in Boston and Philadelphia, and the private court of Mr. Eugene Higgins, at Morristown. Boston boasts of two tennis courts, one being in the Athletic Club building, the other belonging to Mr. Fiske Warren. There is also a court at the Casino, in Newport. Championship matches have been arranged to be played in Boston and New York alternately each year. The first match took place in the New York court, last year, and was won by Mr. R. D. Sears, the ex-lawn tennis champion. This year the match was played in Boston, and resulted in the first instance in a tie. Mr. De Garmandia of New York defeated Mr. Fiske Warren, and was then defeated by Mr. R. D. Sears, who was then in turn defeated by Mr. Warren. In the play-off, Mr. Sears retired, owing to disablement, and Mr. Warren won the championship for Boston, defeating Mr. De Garmandia in a closely contested match.

The Age of the Earth.
Among the wider problems of natural science toward the solution of which contributions have been made during last month, the most striking is that of the age of the earth. Mr. Clarence King, the well known American geologist and explorer, contributes an elaborate article on the subject to the American Journal of Science (ser. 3, vol. xlv., pp. 1-20, pls. i., ii.), in which he claims to have advanced Lord Kelvin's method of determining the earth's age to a further order of importance. He discusses the experimental investigations of Dr. Carl Barus on the effect of heat and pressure on certain rocks, and particularly selects the case of diacertain rocks, and particularly selects the case of dia-
base, which has a specific gravity approximately equal base, which has a specific gravity approximately equal
to the averagespecific gravity of the earth's crust. In the light of the new facts, he then reconsiders the probable rate of cooling of the earth, rendering more precise the conclusions of Lord Kelvin. As the result of the detailed discussion, Mr. King concludes that the earth's age probably does not exceed twenty-four millions of years-in fact, that the estimate of the physicists is approximately correct, while that of the geologists is "vaguely vast."

## Relief Map of the inter- <br> Continental Railvay.

The Inter-Continental Railway Commission have prepared a fac-simile in miniature of Central and South America to show the surveys of the proposed railroad intended to unite the systems of North and South America. The work was done by the hydrographic office, and is a faithful representation of the topography of the countries named. It is about twenty-five feet long and will be sent to the World's Fair as a part of the government exhibit. In addition to the lines surveyed for the railroad, the map also shows the routes of the present and prospective steamship lines from North to South America, with the names of their terminal ports and intermediate stopping points, if any.

Corn husks boilfd in caustic soda are being utilized for the manufacture of paper. The cooking process results in the formation of a spongy, glutinous paste, which is subjected to heavy pressure so as to eliminate the gluten, the fiber remaining being made into paper

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THE NEW YORK TENNIS AND RACQUET CLUB.-[See page 232.]

