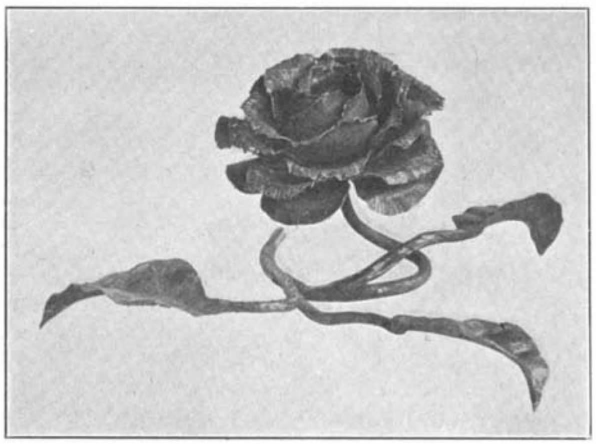
HOW TO MAKE AN IRON ROSE.

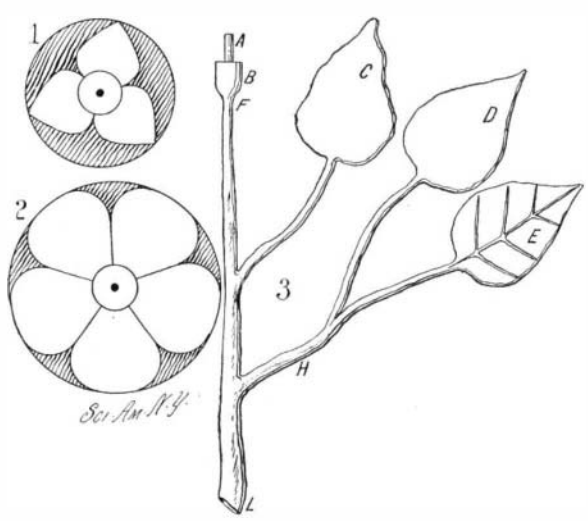
BY PARKER SIMONSON.

An iron rose is a very beautiful specimen of iron work which appears to be very difficult to make. It is, on the contrary, very simple and easy. It can be made by any boy who possesses a few common tools. The materials, costing only a few cents, can be bought in any city or village, or may even be found at home.

From a square foot of common sheet or stovepipe iron, about No. 26, cut out one circular disk three and a quarter inches in diameter, three of three inches, one two and three-quarters of an inch, and one two inches. In the center of these draw a five-eighths-inch circle with a compass, and then cut the two-inch disk into three equal sections and the rest into five sections, remembering to cut down to the line made to the five-eighths-inch circle only (Figs. 1 and 2). Take the shears and cut the two-inch disks (Fig. 1) and the remaining disks (Fig. 2). Now punch a hole in the center of each to fit the neck, *A* (Fig. 1). With a ball-headed hammer strike the petals of the disks, having previously placed them on a piece of lead, until they are convex, and approach the center so that each will be convex. Take a cold chisel and draw its temper down to a dark blue, and then place it in a vise and round off the cutting edge with a file. Take one of the series of convex petals in the left hand and place about one-eighth of an inch of the outer edge on the rounded edge of the cold chisel and strike it with a hammer so as to spread the edge. Do this on the outer edges of all but the two-inch and one of the three-inch series of petals. The petals of the rose can now be laid aside until the rose-stem and leaves are made. A piece of three-eighths of an inch iron rod five inches long, also three pieces of one-quarter-inch iron rod five inches long are required. To form the leaves and rose-stem a forge will be necessary, but if the reader has not one he can doubtless get a neighboring blacksmith to allow him to work at his forge and anvil. To make the leaves, take the three pieces of quarter-inch iron rod and spread one end of each of the three pieces until it is about two inches long and one and a half inches wide; then draw the stems out to about an eighth of an inch in diameter and weld two of the stems together (see Fig. 3, *H*). To make the rose-stem, take the three-eighths iron rod and draw it out in the shape of *BL* (Fig. 3), allowing the part, *B*, to be about one-half of an inch long, and the part, *A*, to be three-eighths of an inch long. The part, *A*, should be filed down until it is about one-eighth of an inch in diameter. Take the remaining quarter-inch-stem and leaf, *C*, and weld it on to the rose-stem, *AL*, and then weld the part, *H* (Fig. 3), on to *AL*, but about two inches from the end of the stem, *L*. It would be best to use a little borax in welding the stems together, because they are very easy to burn; but if borax is used, it will enable the iron to join together readily at a lower temperature. To do the welding proceed as follows: When the iron rods are a bright red, rub them with some borax, which melts and adheres to the iron rods. Then put them back in the fire and proceed in the ordinary manner, only remembering that they have only to approach a white heat, when they will weld together. File the stems and leaves up smooth and then cut the irregular leaves up as shown at *D* (Fig. 3). When this has been done, put one-half of one of the leaves in a vise, and by striking it with a hammer turn the other half over, so that on looking lengthwise along the leaf it will look like a V. Then lay the edge of the leaf on the anvil and strike it with a hammer so that it will spread the leaf and make the ridge of the leaf curved. Put a few creases on each side of the leaves (see Fig 3, *E*) and after this is done attach petals to the stem, *A* (Fig. 3). To do this put the unspread three-inch petal on the stem, *A*, first, then the spread three-and-a-quarter-inch, then the two three-inch ones, then the two-and-three-quarter-inch, and lastly the two-inch. The petals should be forced down into place and then the stem, *A* (Fig. 3), should be struck with a hammer and flattened out so as to bind all the petals firmly together. With a pair of pincers



A HOME-MADE IRON ROSE.



BLANK FROM WHICH THE IRON ROSE IS FORMED.

bend and twist the two-inch petals so that they will form the little bud that is in the interior of the rose. The other leaves should be bent around this to suit the artistic taste of the maker. The lower three-inch disk should have its petals bent down as though drooping. The rose and leaves can now be bent so that it can be set down on a table and look artistic, and if it is desired to protect it from rusting it can be coated over with the following mixture, which is a dull black —drop black and turpentine; use it thin.

If the reader does not know anything about forge work, he can make the rose anyway, but he will have to omit the iron leaves, *C*, *D*, *E*, and substitute in their place some imitation leaves. He can make the petals of the rose as here described. For the stem, *AL* (Fig. 3), take a piece of three-eighths iron rod about six or seven inches long, and file it up into the shape shown in the engraving, and then put the leaves on as described above. Bend the stem into any desired shape, and then wind around it the stems of the imitation leaves and black it, and it will look very neat and attractive.

A DISAPPEARING TOWN.

Northwich, the center of the salt industry of Great Britain, is one of the queerest towns in the country. The whole underlying country is simply one mass of salt. When descending a shaft, one passes through successive thick strata of the mineral. The mining of the salt constitutes the staple industry of the district, and from Northwich alone 1,200,000 tons of salt are shipped annually. The product is obtained by two methods—quarrying and brine-pumping. In the former case, which is the method generally adopted, a shaft is sunk about 300 feet, and the salt rock blasted and excavated in the usual manner. The brine-pumping, although it is still continued upon a large scale, is gradually falling into disuse. When the industry was started it was considered that only one stratum of salt existed, and that was only a few feet below the surface. Fresh water found its way to this extensive salt deposit, with the result that the salt dissolved like snow. A huge subterranean lake of water, charged with 26 per cent of salt, was thus formed. Pumping engines were then installed to convey this brine to the surface to large evaporating pans, in which a heavy deposit of salt was left after the water had evaporated. The result of this extensive pumping is that Northwich now rests, as it were, upon a shell of earth, which at times proves insufficient to support the weight of the houses, with the inevitable consequence that the buildings are constantly sliding and collapsing in every direction. Our illustration conveys a very graphic idea of the magnitude of these subsidences and their effect upon public property. As the result of a subsidence, the building shown in our illustration fell over upon its back in the course of a single night, and it is noteworthy that the house, owing to the care observed in its construction, fell over intact, not a crack being produced in the walls nor even a pane of glass being broken. This is by no means a single instance. Throughout the town the same effects are to be observed upon all sides. There is scarcely a perpendicular wall to be seen; in numerous cases the doors and window frames of the houses are awry; the roads are extremely uneven, and are often closed, owing to the falling in of portions. Houses are being continually condemned as unsafe for human habitation and demolished. The depreciation of public property is enormous. No matter how substantially a house may be built, or how great the care observed to obviate subsidence, the building is bound to sink sooner or later. In one instance, a house that cost $30,000 to erect was shortly afterward sold for $7,500, it had been so injured by subsiding. In some cases the sinking is very gradual, while in others it is unexpected and instantaneous. One of the principal thoroughfares took forty years to sink fifteen feet, while another grew appreciably wider every day. Examination proved that one side of the street was slipping completely away. In this instance the foundations of the houses were three feet distant from the buildings which they originally supported. The shop of a dry goods merchant sank one-fifth of its height in ten years, and in the subsequent seven years subsided another fifth. Several houses may be seen, the windows of the ground floor of which are level with the roadway. It is no uncommon circumstance for a building to be constructed and have to be abandoned shortly after its completion.

The inhabitants,

A DISAPPEARING VILLAGE IN ENGLAND.

however, endeavor to mitigate the danger of their buildings' collapsing by constructing them upon the frame principle, with massive timber beams securely bolted together. By this means if a subsidence occurs the house does not necessarily collapse, but heels over in toto. In this instance the house is raised to its normal position once more by means of jacks, the cavity filled in, and the building once more rests upon a firm foundation. Should another subsidence occur, the process of lifting is repeated. In the case of the subject of our illustration, however, the original house was so damaged that it had to be demolished and the ground prepared for the building depicted in our illustration. But it had not been built twelve months before another subsidence occurred, throwing the building into the position shown in the photograph.

Yawning chasms are constantly appearing in the streets, and in some instances the cavities are so extensive as to necessitate the closing of the thoroughfare.

The area in which these subsidences occur covers about two square miles. A few years ago the matter was brought before the attention of the British Parliament, and the result of their investigations showed that damage had been inflicted upon 892 buildings, of which total 636 comprised houses and cottages. Some idea of the extent of the excavations in this area may be gathered from the fact that as a ton of salt represents one cubic yard, and 1,200,000 tons of salt are produced every year, therefore 1,200,000 cubic yards of solid material underlying the town is removed annually.

The water from the river also gravitates toward these subsidences, causing huge inland lakes, which aggravate the danger. One of these lakes, locally called "flashes," covers no less than 100 acres and varies from 40 to 50 feet in depth.

Notwithstanding the frequency of these subsidences and that they are often unexpected, strange to say not a single life has been lost. Havoc has been wrought among cattle, however, several animals having been completely engulfed. The tall shafts of the pumping stations are also another source of danger, since they are gradually thrown out of plumb, the list continuing until the stack heels over, burying and destroying everything in its path.

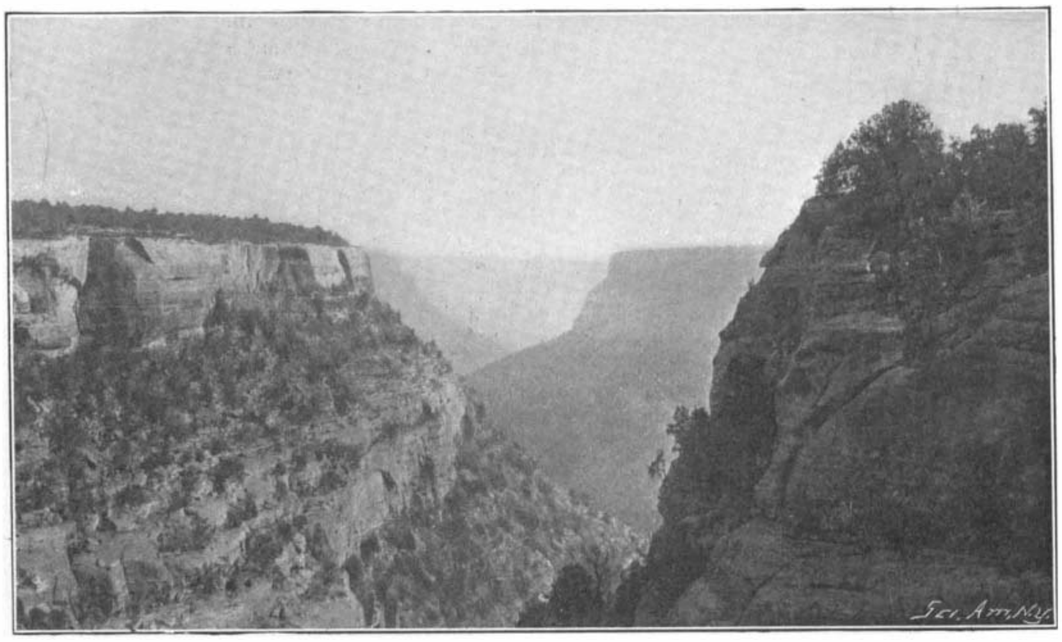
A few years ago a compensation board was founded. This corporation levies a tax of six cents upon every ton of brine that is pumped to the surface, the revenue derived from this source being devoted to compensating those unfortunates whose property has been damaged by subsidence.

In an article by M. G. L. Bourgerel, in the Moniteur Scientifique, the author states that by using an acetylene blowpipe, and a suitable supply of oxygen, temperatures approaching those of the electric arc can be readily obtained. It seems, however, that undiluted oxygen must not be used, or there will be a deposit of carbon and other troubles. By experiment the proportion of oxygen and air can readily be found, [illegible]er these conditions the acetylene burns with a [illegible] luminous, but intensely hot, flame, which, by [illegible]ing the relative proportions of oxygen and ai[illegible] made either oxidizing or quite neutral.

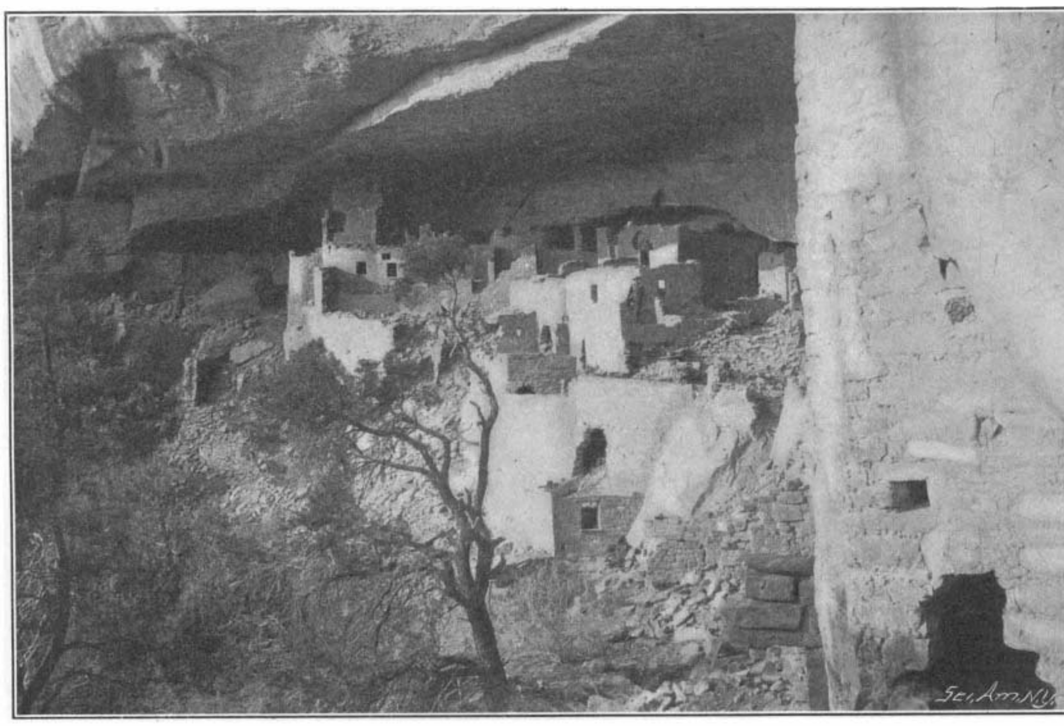
A CLIFF-DWELLING PARK IN COLORADO.

BY COSMOS MINDELEFF.

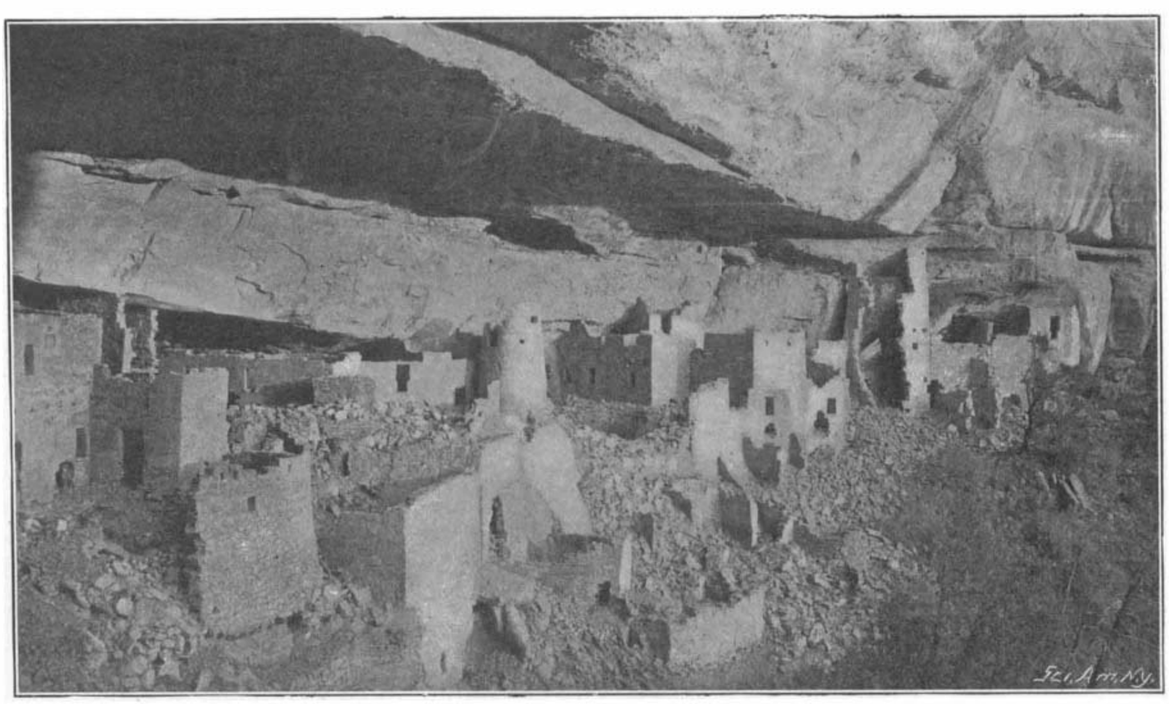
Action by Congress in the closing days of the session which ended March 4 last renders certain the preservation of the most interesting cliff ruins in this country, and their protection from further spoliation. The region known as the Mesa Verde, in Colorado, in which there are hundreds of ruins, is to be set aside as a public park, and steps are to be taken to put a stop to the commercial exploitation of the works of the ancient cliff dwellers.



VIEW DOWN CLIFF CAÑON.



RUIN IN CLIFF CAÑON FROM SOUTH END.



RUIN IN CLIFF CAÑON FROM NORTH END.

Discovered some twenty-five years ago, the ruins on the Mesa Verde and in the Mancos Cañon, which cuts through the heart of the elevated tableland, rested for a long time undisturbed and even unvisited, owing to the inaccessibility of the place. Within the past ten years, however, ranchmen living in the vicinity found that specimens from the ruins had a commercial value, and active work began on the stripping of the remains of everything which could be carried off. Under the Act of Congress this destruction will soon cease. The Mesa Verde is an elevated tableland of the type which characterizes southwestern Colorado and northern New Mexico and Arizona. It is irregular in form, comprising about seven hundred square miles, approximately flat on top, but cut into innumerable cañons and gorges by the Mancos River and its tributaries. The great development of the art of building among the ancient cliff dwellers was due in a large measure to the peculiar geological features of the country, nowhere better illustrated than in the Mesa Verde.

The Mancos Cañon is about thirty miles long and from 1,000 to 2,000 feet in depth, the narrow, irregular river bottom being bounded by long, steep slopes of débris, which merge into a succession of steeps and slopes, culminating above in a series of lofty cliffs. Traces of the old cliff dwellers are to be found throughout the region, along the bottoms, in the cliffs, and on the high tablelands. Taken altogether, there is no region which surpasses the Mesa Verde country in its archæological interest, or which is better worth preservation, although it should be noted that the Indians have a tradition of another and better region to the south.

Practically all the more important types of ancient dwellings are represented in the remains found in the Mesa Verde region, and, in addition, there are others which reach a development there not attained elsewhere. Even the large valley settlements, comprising several hundred rooms, and located without reference to defense, the highest type of the ancient builders' architecture, are found here and there in favorable sites on the canyon bottom.

These valley settlements merge almost insensibly into the cliff dwellings proper through another type which might be termed cliff villages, a type which appears to have reached its highest development in the Mesa Verde region. One of the most imposing of these cliff villages, discovered in comparatively recent times, is a ruin which has been called the "Cliff Palace," found in the upper part of Cliff Cañon, one of the principal gorges which join the Mancos Cañon from the north. The ruin is 425 feet long and occupies a cove in the cliff about 80 feet high and about the same in depth. Some of the rooms were circular, some oval in shape, but most of them were rectangular, and in places the structure was at least three stories high. Access to the settlement could be had only from above, by the aid of a series of steps cut into the face of the cliff. Eight miles above the mouth of the Mancos there are the ruins of another large cliff village. In this case the houses occupied two narrow ledges in the cliffs, one about thirty feet above the other, and at least 800 feet above the cañon bottom.

The cliff villages always contained one or more circular rooms, the use of which was doubtless religious, for similar structures are found in the valley ruins