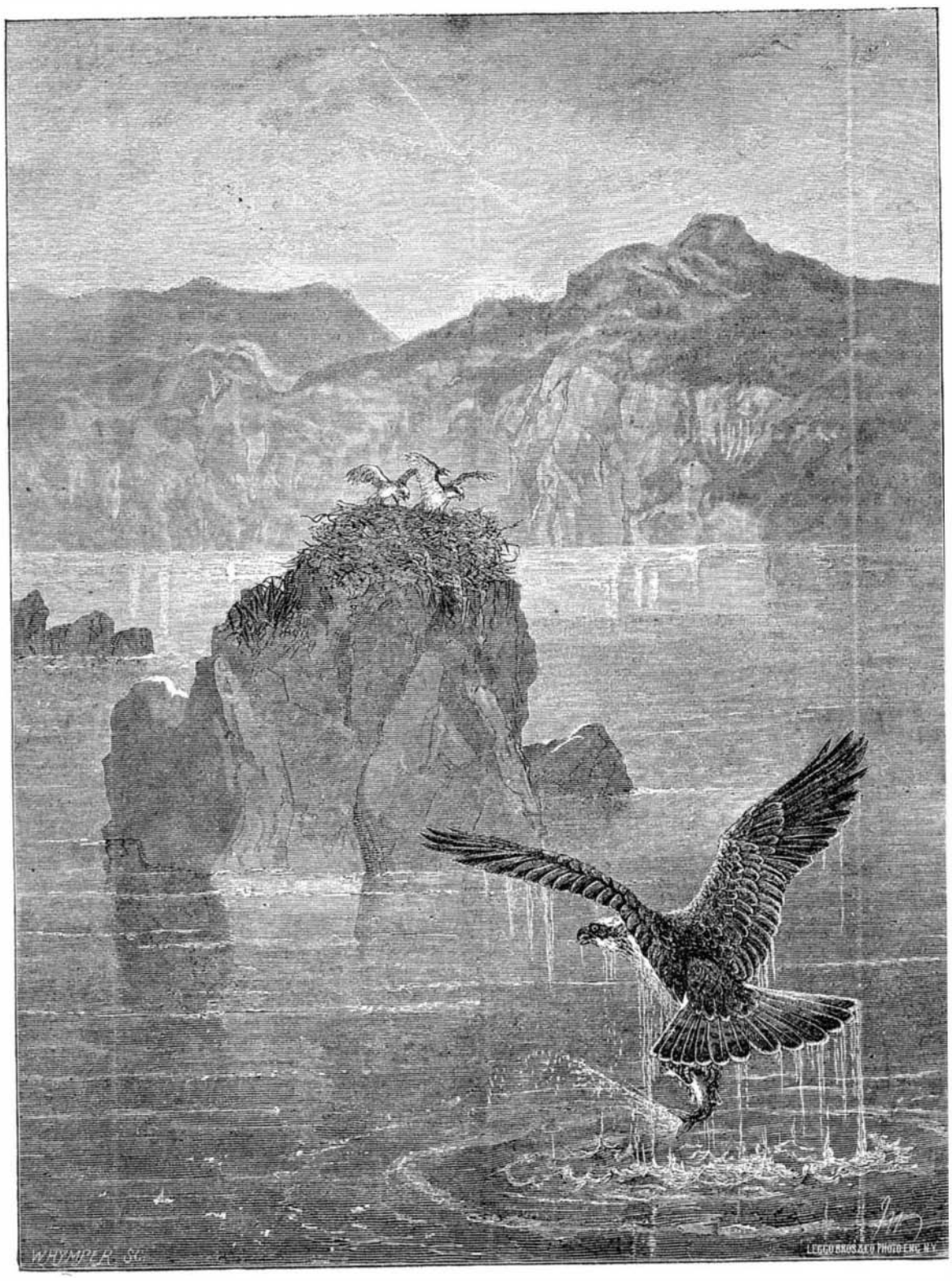
THE FISH HAWKS.

The hawks are a family of birds containing members of varying characteristics, but the similarity of the branches is sufficiently obvious to show their relationship. The vultures, eagles, owls, and almost all other birds of prey are entitled to share in the attributes of speed, courage, and endurance with which we are accustomed to endow the hawks; and the beautiful specimen shown in our engraving, the osprey, embodies these characteristics thoroughly. It belongs to the sub family *aquilinæ* or eagles, of the family *falconidæ* or hawks, and Savigny further distinguishes as a separate genus, *pandion*. It is characterized by a short bill, curved from the base to the acute-hooked tip, and compressed laterally with slightly festooned margins; the wings extend to the tip of the tail. The general form of the bird is heavier and less adapted for rapid and vigorous flight than that of the eagles; the *tarsi* are short, and the toes are very rough underneath, long, and united at the base, and the claws are long, curved, and sharp. Three different species of osprey or fish hawk are known, inhabiting respectively America, Europe and Asia, and Australia. They all belong to the temperate regions, living in the vicinity of arms of the sea, lakes, and rivers; but they are sometimes found some hundreds of miles from land, especially in stormy weather. They usually keep at a moderate hight in the air, watching the surface of the water; upon the appearance of a fish within reach, the hawk closes its wings and plunges headlong, sometimes going entirely beneath the surface, but seldom failing to catch its fish. The rise of the bird with its prey is singularly characteristic and majestic; and the eminent naturalist and artist, Mr. Joseph Wolf, has seized the occasion, at this instant, to portray one of the most vigorous and delicate pictures of animal life which have come under our notice.

The scene is one of the highland lochs of Scotland, and the sky and distance, together with the rocks and water, are drawn with remarkable accuracy and delicacy of effect. The solitary rock with its roughly built nest, from which two hungry young ones are peering, is an effective center to the picture.

The fish hawk in this country, however, finds a formidable foe in the American or bald eagle, who disdains fishing on his own account, but has a great talent for obtaining that procured by the courage and industry of other birds. He usually watches the fish hawk till he thinks he has an opportunity, and then overcomes him by superior weight and strength, and carries away the prize.



THE OSPREY AND ITS PREY.

We select this beautiful engraving from the pages of a handsome volume of drawings by Mr. Joseph Wolf, which have been engraved by the celebrated brothers Whymper, and printed by one of the fraternity. Mr. Edward Whymper adds to his great artistic genius an undaunted spirit in scientific research; and he has gained great renown as a traveler in many almost inaccessible countries and as a member of the Alpine Club, of London. We shall, as occasion may arise, make some further selections from this volume, which is published by Mr. Alexander Macmillan, of London, England.

The Industries of Hartford, Conn.

While the statistics of the manufactures of Hartford, Conn., for the year 1875, are not on the whole encouraging, some of the companies manufacturing articles protected by patents seem to have been very successful, for instance: The Woven Wire Mattress Company has paid the largest percentage of return upon its capital. It divided $24,000 on a capital of $60,000, or at the rate of 40 per cent. The National Screw Company, which has since been absorbed by the American Screw Company of Providence, paid 22 per cent. The Willimantic Linen Company (which makes cotton thread), the Hartford Carpet Company, and the Gatling Revolving Gun Company declared each 20 per cent.

The Proposed New Croton Aqueduct for New York City.

The Commissioner of Public Works of this city has lately published a report relative to the proposed new aqueduct which is to bring in a sufficient supply of Croton water, the present aqueduct being, as is well known, altogether too small to meet the full requirements of the population. Surveys for this work have been in progress for the last five months. The city reservoirs, says the report, contain a supply for ten days only; and in case of an accident to the present aqueduct which would require repairs occupying more than ten days, the supply would entirely cease. It is appalling to contemplate the consequences of such a contingency. Even now the aqueduct requires repairs which are postponed because the water cannot be shut off long enough to make them. With two aqueducts, all necessary repairs to the one could be thoroughly made, while the other would be sufficient to supply the immediate demands. The Croton River drains an area of about three hundred and fifty square miles. From careful observations by the engineers of this department, extending over a period of many years, it is ascertained that an average daily quantity of 300,000,000 gallons of water flows over the Croton dam, nearly all of which could be brought to this city if we had sufficient storage and aqueduct facilities. The plans now presented contemplate the building of a dam on the Croton River, about one fourth of a mile above the head of Croton Lake, to an elevation of thirty feet above the top of the present dam, forming a settling basin of about 800 acres in extent, and a capacity of 1,180,000,000 gallons. Thence a tunnel is to be cut through the hills south of the Croton River, through which the water will be conveyed to the head of the aqueduct. The aqueduct is to be built on one of the two routes described—the Bronx River route, 36 8 100 miles in length, or the Saw Mill River route, 36 52-100 miles in length—to High Bridge. The masonry aqueduct will not be continued beyond a point in the vicinity of Jerome Park, in the newly annexed territory, where it is proposed to build a receiving reservoir of a capacity of 550,000,000 or 600,000,000 gallons. The *niveau* of this reservoir will be 42 feet above that of the Central Park reservoirs, and from there the water can be carried in iron pipes, the ground falling off abruptly towards the Harlem River, and rendering a masonry aqueduct impracticable. These pipes may cross the Harlem River either on High Bridge, which can readily be arranged for that purpose, or under the sidewalks of tunnels which the Department of Parks proposes to build under the Harlem River. In either case the expense would be comparatively small, and the pipes could be laid from time to time, as necessity demands. The new aqueduct is to have a capacity to deliver 150,000,000 gallons of water daily, thus increasing the supply by the two aqueducts to 250,000,000 gallons per day, with the additional and inestimable advantage of the elevation of head of the new supply of 42 feet above that of the park reservoirs, furnishing abundant water to the highest elevations in the city. The estimated cost of the new aqueduct is $10,000,000.

Fireproofing Fabrics and Wood.

In nearly all the recipes published for rendering ladies' dresses or woodwork uninflammable, the chief ingredient has been tungstate of soda; and although this salt has been proved to be very competent for that duty, its scarcity and the consequent expense puts it out of the reach of many. The following formulæ of Patera have been recently subjected to careful experiment at Vienna, and have been found most excellent.

1. A mixture of borax and sulphate of magnesia (Epsom salts) is prepared by dissolving 3 parts by weight of borax and 2¼ parts of Epsom salts in 20 parts of water. The efficiency of this mixture is due to the formation, upon the fiber of the cloth or the tissues of the wood, of the borate of magnesia, which is alike insoluble in hot and cold water; and the fiber being enveloped by it, the evolution of combustible gases is very difficult, and the flame is prevented from seizing upon them.

2. Another excellent material for fireproofing is a mixture of sulphate of ammonia and sulphate of lime or gypsum, in different proportions, according as it is to be used upon fine or coarse goods. The sulphate of lime seems to form, with the ammonia salt, a double sulphate which does not (or only in a very slight degree) possess the disagreeable properties of that salt. The action of this mixture of salts, which is capable of extensive use on account of its cheapness, depends, on one hand on its enveloping the fiber, and on the other on the volatility of the ammonia salt at a high temperature, whereby the flame is smothered; 1 part of sulphate to 2 parts of gypsum may be employed, and woodwork simply painted over with a concentrated solution of the salt is sufficiently protected from fire. The wood is not, indeed, incombustible, but it takes fire much less easily, gives but little flame, and ceases to burn of itself as soon as the igniting body is removed. Since roofs thus impregnated would lose this property because of the salt washing out, Patera sought to protect it by a coat of tar, oil paint, or oil varnish, and found that the fireproof quality suffered but little. If it were allowed to thoroughly penetrate the wood, as is done in protecting timber from rot, the effect would be increased; but no experiments have been made under those conditions. Patera also tried Fuchs' proposed method of mixing water glass with an insoluble substance, like elutriated chalk, bone ash, clay, glass, etc., and decided that his process was the best for wood.

Universal Nature.

Nature has always had the credit of adapting her means to ends. The tenderness of her provision for the wants of the humblest of her creatures is illustrated by Mr. Darwin, who says that male grasshoppers use their hind legs to fiddle on the edge of their wings, and that the best fiddler first succeeds in fascinating the females. Behold how the industrious spider spins her web, and then sucks the blood of her husband and flings his carcass out in the back yard. Thus it is that the harmonies of life swell the grand diapason of the Universe, as it were.