

## ORNITHOLOGY

# Blue Eagle, Though Flattened, Is Very Plainly an Eagle

**J**UST WHAT kind of a bird is the blue eagle of the NRA? A good deal of discussion has arisen over the ornithological position of this symbolic bird. It was hardly hatched before commentators, not all of them friendly, started to deny that it was an eagle at all. "Kind of a blue hawk," some of them said. A few would have it that the bird is a phenix. And disapprovers have labelled (or libelled) the bird as a buzzard.

One cannot safely indulged in a too-exact natural history study of an heraldic bird—and the "displayed" blue eagle of the NRA, spread out in an attitude impossible to a live bird without the aid of a steam roller, is first and foremost a creature of heraldry. Its taxonomic features must therefore be taken a bit liberally.

Allowing for this, the bird is plainly eagle. Its feather "trousers," extending clear out to its feet, are those of the golden eagle; the bald eagle's lower legs are bare. But that is no sin against the letter of American heraldry, for when our national bird was chosen Congress merely specified "the Eagle," without mentioning the bald eagle, although that bird, being exclusively American while the golden eagle is known also in Europe, would really seem to have the better claim.

The beak is distinctly of an eagle, aquiline. There is a moderately long basal portion, which bends abruptly over into a sharp, cutting, down-pointed tip. Hawks' beaks round over directly from the base, and are thereby shorter-appearing than the eagle's beak.

A buzzard the bird certainly is not. Buzzards do not have sharply bent-over tips on their beaks. Carrion-eaters, their cutting and tearing implement does not need to be as strong as those of eagles and hawks, which are predominantly eaters of clean, fresh meat.

Of course, neither eagle, hawk nor buzzard has feet like the NRA bird, with only three toes. They all have four-toed feet, three toes directly forward and one backward. But designers of emblems, like poets, must be allowed a certain range of license.

Supporters of the claims of the phenix have two things in their favor.

Since the phenix was a totally legendary bird anyway, it could look like anything the artist chose to make it look like; so shape of beak and number of toes do not especially matter. The color of the bird also favors the phenix, for it was by tradition "purple and gold of plumage"; and blue is a fair approximation of that, while nobody ever saw a blue eagle, a blue hawk or a blue buzzard.

Against the phenix one must count the absence of flames. The phenix of heraldry, both medieval and modern, is always shown rising from the bath of fire that consumes it and at the same time renews its youth. And it would do no good to claim the lightning in the NRA bird's left claw as flames: even the men of the middle ages, who didn't know what lightning was, plainly distinguished it from ordinary fire.

All things considered, therefore, the careful student of ornithology would probably have to give his verdict in favor of the eagle as the real parent of the NRA bird.

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## METALLURGY

## Gas Defends Metals Against Corrosion Losses

**H**YDROGEN, the lightest gas known to man, is the sole defender against the ravages of corrosion. That hydrogen was the limiting factor in preventing wholesale corrosion of metals exposed to dampness was the opinion expressed by Prof. Oliver P. Watts of the University of Wisconsin, before the Electrochemical Society.

The slow but certain eating away of water pipes and minerals by salt and acid waters is adding an enormous amount to the cost of modern civilization. Engineers are studying the theories of corrosion because it is only through a more complete understanding of the fundamental process that they will be able to diminish this loss.

Thirty years ago Dr. R. W. Whitney, now vice-president of the General Electric Company, announced that the corrosion of metals was an electrochemical process and this view is generally ac-

cepted today. When a metal is in contact with an acid solution corrosion takes place by the chemical process of the metal replacing the hydrogen in the acid. The acid dissolves the metal and hydrogen is released.

This released hydrogen coats the metal surface with an electrically charged layer that prevents the chemical reaction from continuing at the initial rate. If the hydrogen layer is built up to a sufficient thickness the reaction is practically stopped. However, under natural conditions, the hydrogen combines with the oxygen of the air to form water and the dissolving of the metal goes, limited by the amount of oxygen available to remove the protective coat of hydrogen.

Impure metals are corroded more quickly than pure metals. Electrochemists believe that this is due to the impurities taking up the hydrogen. Contrary to the popular belief pure metals are subject to corrosion under the action of certain acid solutions. Prof. Watts has shown that if oxygen is absolutely excluded copper will not corrode in a solution of sulfuric acid, a reaction that is very rapid in the open.

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