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The Rose-colored Pastor and Locusts.

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In a recent important work on destructive locusts (Locusts and Grasshoppers, A Handbook for their Study and Control, Moscow, 1927, in Russian), B. P. Uvarov refers to the services rendered by certain birds in the struggle with this pest, and in particular to the Rose-colored Pastor (*Pastor roseus*), which is well known for its fondness for these insects. The author considers that we have little real basis for and estimate of the amount of help which these birds afford mankind in this respect and recommends a census of the contents of the stomachs.

This, it is true, would enable us to form an idea of the quantities killed and eaten by these birds under given conditions, but the figures would be misleading, for such a census would take no account of the much greater quantity undoubtedly killed but not actually eaten.

I have often observed the destruction of locusts by these handsome starlings in the Kirghiz Steppes and in Turkestan. I use the word "destroy" with intent, because it is not only a case of the birds feeding on the locusts but of a strange instinct on their part to continue to kill them off when their appetite is sated. This fact is not generally known either to ornithologists or to entomologists although it is perfectly familiar to the natives of Turkestan and to people engaged there in the struggle with locusts, the worst offender among which is the so-called Moroccan Locust (*Doclostaurus maroccannus*, Thunb.).

In years when this insect swarms the rose-colored pastor appears in immense flocks, no one knows whence. As a general rule this bird nests in small colonies in stony places and is met with in the cultivated belt of Turkestan in small flocks. Clouds of them fly into the valleys of Turkestan, where locusts appear and energetically set to work to exterminate

them. Locusts have plenty of enemies among birds, and one of the chief is the domestic fowl, which the natives often mobilize to give battle with the insects. But whereas other birds devour locusts only as a dainty, the rose-colored pastor carries on the good work and continues to kill even when it can eat no more. We may safely say that places where this bird comes to the rescue in force will be rid of the locusts. The pastor is in fact such an efficient ally of man in this struggle with these destructive creatures that when they appear all other measures against the insects are stopped.

There is, however, a limit, to their capacity for usefulness. A necessary condition for the success of their operations is the presence of water. This is indispensable for them, not merely to drink, but periodically to wash their beaks. For as a result of their vigorous pecking at the creatures their beaks become covered with a pasty mass and stick together. The birds then fly off to the nearest water, wash their beaks thoroughly and then return to the fray. When it happens, as it often enough does, that the locusts appear in waterless places, the pastors are handicapped seriously in their work. In this case, if it is possible, the natives dig special canals to bring water for them to wash their beaks, sometimes over a distance of several miles.

There are two surprising things in the behavior of these birds. First, the intense eagerness to destroy the locusts, apparently without any need, for the sheer love of killing, even when their hunger is satisfied, and, secondly, their concentration in enormous flocks at the scene of action not at the time of their migration.

The rose-colored pastor is by no means commonly met in Turkestan at ordinary times. Many inhabitants of the country have never seen one. The concentration therefore of small isolated flocks into enormous masses must take place over an area of many hundreds, and indeed, thousands of square kilometers. In the Orenburg district, for instance, the pastor is quite a rare bird in normal times, but in locust years great flocks of them fly as far north as the 51st parallel. Such a phenomenon would be comprehensible if the birds followed flights of locusts on the wing, but the most important part of the work is done at the time when the locusts are not yet capable of flight and move on the ground, which is just the period when they are most damaging to agriculture.

When the pastors have done with the locusts, flocks of them make devastating attacks on cherry orchards and so arouse the wrath of Russian gardeners. But the natives of Turkestan regard this more philosophically and reasonably, for they think that the damage they thus do to the fruit is insignificant compared with the benefit which they confer by the destruction of the locusts, and by no means grudge a little payment in the form of fruit to these beautiful and useful allies of mankind.