vise til en lige udkommet Artikel i Sveriges ornitologiska Förenings Organ „Vår Fågelvärld", 1945, Side 18 (LARS FAXÉN: Invasionen av tallbit, *Pinicola enucleator* L., vintern 1942-43), der beretter om en Masseforekomst af Krognæb, som der ikke har været iagttaget i Sverige i de sidste 30-40 Aar.

The Occurrence of Pine Grosbeak, *Pinicola enucleator* L., in Denmark.

In the 19th century a rather large-scaled invasion of Pine Grosbeak in Denmark took place several times. In the following winters, 1813-14, 1817-18, 1862-63, 1866-67(?) and 1890-91, it thus occurred in particularly great numbers. In this century the species on the contrary has not appeared in a single winter in great numbers, thus having been only a rare visitor within the boundaries of Denmark during the last fifty-five years. The last great invasion during the winter of 1890-91 took place notably over the eastern parts of Denmark (see the attached map showing the localities at which the species was found), and the birds appeared especially in October and November, while relatively few individuals wintered in this country.

On the different position of the legs of birds during flight and in cold weather.

By HARRY MADSEN.

(Med dansk Resumé).

That birds fly with their legs stretched right backwards can be read in the literature from children's books to scientific works. I began, however, to doubt about the validity of this rule when, as a taxidermist, I was stuffing birds in the position of flight and had to place their legs in a natural way; this task often met with almost insurmountable hindrances. Together with stud. mag. BOYE THORUP I, therefore, began to study the position of the legs of the birds in nature, and especially along the lakes in Copenhagen I found a rich area of observation in the large numbers of different ducks and gulls

Fig. 1. Lesser Black-backed Gull with the legs directed backward. Phot. ARTHUR CHRISTIANSEN.
Sildemaage med Benene bagudrettet.

which are always found there, where they can be studied at close quarters.

To my surprise it soon appeared that e. g. gulls under certain circumstances can fly with their legs drawn up, i. e. that the foot from the heel is bent forwards and pressed in among the feathers on the belly so that these completely cover the naked legs during the flight.

The next question then became to examine under what conditions the animals prefer this peculiar position of the legs; and it soon appeared that the temperature was one of the most important factors influencing the position of the legs, for when it was very cold all ducks and gulls at once drew up their legs into the warm air of the plumage. As both the winters of 1940-41 and 1941-42 were unusually severe and long and with great oscillations of temperature we had a good opportunity to investigate the different position of the legs of the birds. On several days it was thus thaw in the morning but hard frost (less then 10 °C. below zero) in the evening. It soon appeared that all the gulls hid their legs among the warm feathers when the temperature fell some degrees below zero. If,

Fig. 2. Young Great Black-backed Gull about to draw its legs forward and up among the feathers. Temperature 15 °C. below zero.
Phot. A. CHRISTIANSEN.

Ung Svartbag i Færd med at trække Benene frem og op i Fjerdragten. ÷ 15 °C.

on the other hand, the temperature was near zero an almost equal number of birds flew with their legs directed backwards and drawn up.

A single day when the temperature fell to 19 °C. below zero the lake was frozen with the exception of a single opening in the ice a small distance from the shore. Several hundreds of gulls were lying down on the ice, while others were flying to and from the opening, where those which were on the water at once began to tidy themselves in the usual way with flapping of the wings and small dives which toilette took a few minutes. Then the animals rose from the water, flew 10 or 15 metres, and shook themselves vigorously once or twice (in order to get rid of as much of the water as possible). All the birds at once drew up their legs among the feathers when they rose, and thus flew some hundreds of metres out over the ice where they descended. Immediately after the landing they smoothed the feathers on the belly with their bill and lay down on the ice.

From the moment when the bird landed and until it lay down on the ice only a couple of seconds passed for which reason the naked feet were exposed only for a short time to the low temperature and to the risk of freezing on to the ice.

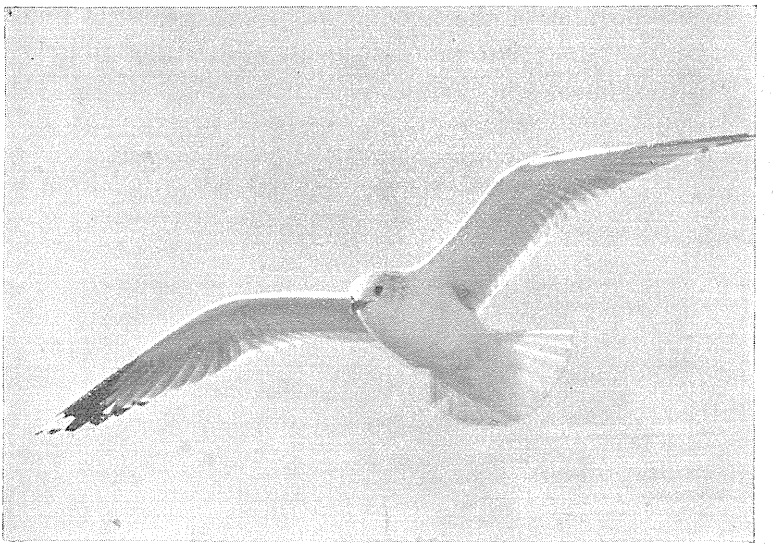

Fig. 3. Common Gull with its legs drawn up; the small depressions under the belly indicate the outermost toe joints under the plumage. Temperature 10-15 °C. below zero. Phot. LUDVIG SVENDSEN.

Stormmaage med optrukne Ben, de smaa Buler under Bugen antyder de yderste Taaled under Fjerdragten. ÷ 10-15 °C.

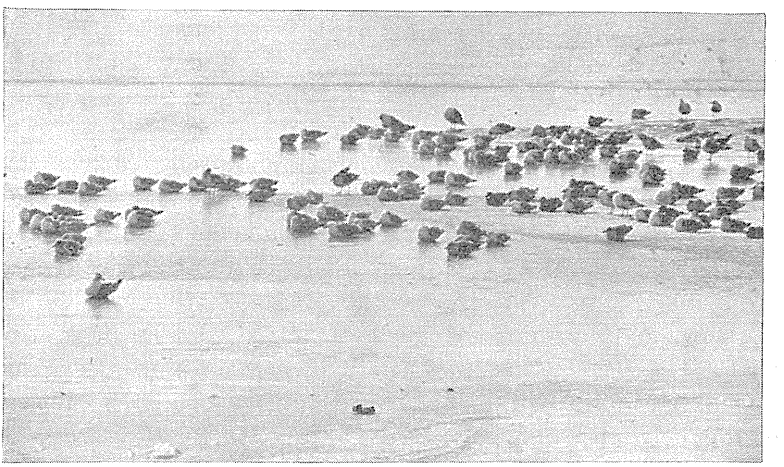

Fig. 4. Gulls in resting position on the ice. When the bird lies down feet and legs are entirely drawn up and thus do not touch the ice; they are also protected from the low temperature of the air (10 °C. below zero). Phot. U. MØHL-HANSEN.

Maager i Hvilestilling paa Isen. Naar Fuglen lægger sig, er Ben og Fødder helt optrukne og kommer saaledes ikke i Berøring med Isen; er tillige beskyttet imod den ydre lave Temperatur. ÷ 10 °C.

In the opening of the ice the water was near the freezing point at that time, but this temperature does not trouble the feet of the gulls.

When the gulls lie down on very cold ice, the feet do not touch the substratum and are not exposed to injury by frost or to freezing on to the ice; for the animal at once hides its feet in its warm plumage.

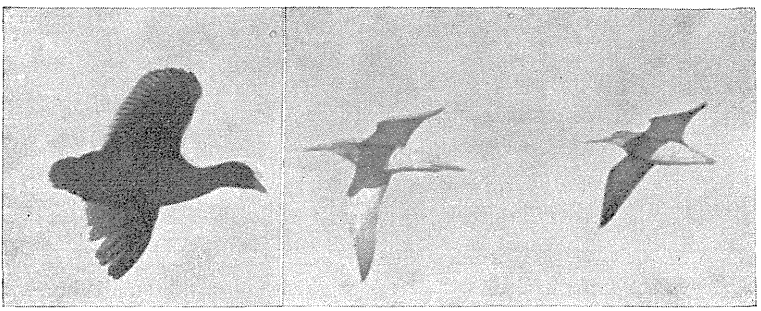

Fig. 5. Fig. 6.

Fig. 5. Common Coot with its legs quite drawn up. Temperature 20 °C. below zero. Phot. A. CHRISTIANSEN.

Blishøne med optrukne Ben. ÷ 20 °C.

Fig. 6. Migrating Spotted Redshank. The bird to the right with its legs drawn up. Phot. A. CHRISTIANSEN.

Trækkende Sortklirer. Fuglen til højre med optrukne Ben.

That the feet of the gulls cannot endure a too hard frost without being covered is distintly seen if the musculature of the legs has been injured and the foot become stiff so that it cannot be kept warm among the feathers. Such a leg will swell heavily by frostbite.

How do other birds protect their naked feet in a strong cold? It is easy to see that small birds (blackbirds, sparrows) near our houses will also cover their legs with the feathers of the belly in as high a degree as possible. If they are sitting on a branch the feathers will be lowered somewhat along the legs which are further bent as much as possible in the heel; during the flight the feet are drawn up under the belly as the gulls do.

If small birds are compelled to find their food on the ground the body will be lowered as much as possible by a flexion in the heel; thereby the feathers can reach right down around the legs as a kind of foot bag. If the bird finds food which it takes a long time to handle, it will lie down with the legs drawn up under it like gulls on cold ice.

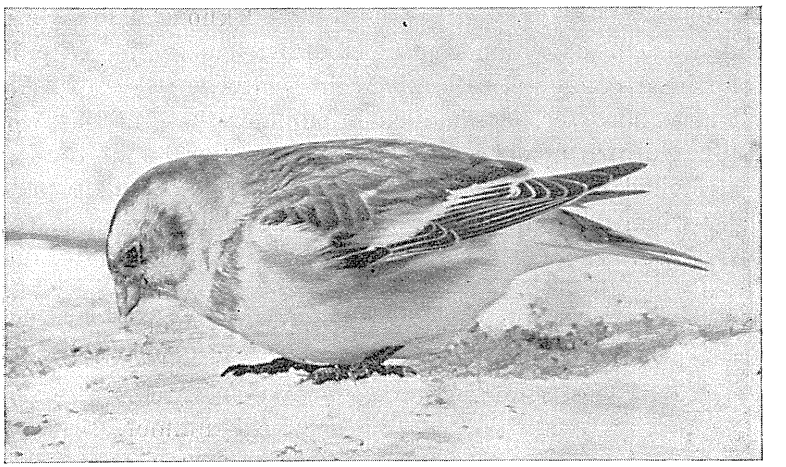

Fig. 7. Snow Bunting about to protect its feet and legs from the cold with the feathers which can hide them completely when they are further lowered. Temperature 15 °C. below zero. Phot. A. CHRISTIANSEN.

Snespurv i Færd med at skærme Fødder og Ben med Fjerdragten, som helt kan skjule disse, naar de yderligere nedsænkes. ÷ 15 °C.

If ducks swim on the water in a strong cold they may also for a short time draw up their feet among the feathers in order to warm them in the same way as we do by putting our hands into our trousers' pockets.

It is a well known phenomenon that sleeping birds put their bill and part of the head under the wing. I do not, however, quite understand the significance of this. But in a severe cold the effect must be that the air which the bird inhales is relatively warm. Likewise the air which it breathes out may in some degree benefit the plumage. The most essential importance may however be that the living parts of the naked bill are covered, thus being protected from frostbite in the same way as the legs drawn up among the feathers.

That also the naked parts of the head of birds may be exposed to frostbite can be observed in the domestic hen. In 1942 I one morning let out my hens after a night during which the temperature had been 25 °C. below zero. Ten of the animals had the comb heavily swollen owing to frostbite; the two remaining hens, on the other hand, had not suffered from the cold because they had had their heads under the wing. In this connection should be pointed out the well known fact that in gallinaceous birds which live in cold districts the naked parts on the head completely disappear in winter.

It may, however, also happen in summer that gulls fly with their legs drawn up, although it is most general that the legs are stretched backwards during the warm season, more particularly when the animals are on short excursions, e. g. searching for food. The legs are then used as brakes and balance poles during the different quick manoeuvres which may suddenly become necessary during the hunting excursions.

If, however, the gull is on a long excursion the legs are stretched forward and completely covered by the feathers. This remarkable position of the legs in summer is hardly solely due to the temperature but is rather a question of technique of aviation. I therefore approached a well known technicist of aviation and he gave me the following information:

When the bird flies with "visible" legs directed backward eddies will always form around these, checking the propulsion. But this is avoided if the legs are hidden among the feathers. A modern aeroplane is just made in the way that the landing device can be drawn into the body of the machine during the flight in order to avoid resistance. It is obvious that the birds are born with the ability to exploit this technical refinement.

Thus the photographs found in the literature are not incorrect, but they were not taken in severe cold or when the bird was on a long journey with the legs drawn up, and they are therefore not universally valid.

Dansk Resumé.

HARRY MADSEN: Fuglenes Benstilling under Flugt og i Kulde.

Det er ikke altid, at f. Eks. Svømmefuglenes Ben holdes rettede bagud eller nedad under Flugten. Det sker saaledes under visse Forhold, at flyvende Fugle bøjer Fødderne i Hælen, saa at de anbringes under Brystet, hvor de trykkes ind mellem Fjerene, saa de er helt skjult af disse. Derved opnaas, at de nøgne Ben bliver beskyttede mod Kulde, hvilket er særlig vigtigt, naar den ydre Lufts Temperatur er lav, f. Eks. om Vinteren eller under længere Flyveture. Samtidig undgaas bremsende Strømhvirvler under Flugten, hvorfor optrukne Ben ogsaa ses om Sommeren.

Naar Fugle paa særlig kolde Dage lægger sig paa Isen, trækkes Benene helt op i Fjerdragten, saaledes at Fuglen hviler paa denne. Ligeledes kan man nu og da om Vinteren i særlig haard Frost se Fugle, der ligger i Vaager, med optrukne Fødder, saa at de er helt skjult af Bugfjerene.

Ogsaa Smaafugle paa Grene eller Jorden kan i Kulde foretage en Bøjning i Hælen, indtil de nøgne Ben er dækkede af Fjer.

Næbbets nøgne, levende Dele beskyttes ogsaa mod Frostskade, naar Fuglene under Søvn „stikker Hovedet under Vingen". Samtidig kommer Varmen i den udaandede Luft Fjerdragten til Gode, og den indaandede Luft er ikke saa kold, som hvis den kom direkte fra Atmosfæren.

At Hovedets nøgne Dele kan skades af Frost iagttages let paa tamme Høns i strenge Vintre. I denne Forbindelse henledes Opmærksomheden ogsaa paa det velkendte Forhold, at de nøgne Partier paa Hovedet af Hønsefugle, der lever i kolde Egne, forsvinder helt om Vinteren.

Stud. mag. BØJE THORUP skylder jeg Tak for værdifuld Hjælp ved den foreliggende Undersøgelse.