JAHANGIR — THE NATURALIST

M. A. ALVI & A. RAHMAN

NATIONAL INSTITUTE OF SCIENCES OF INDIA
NEW DELHI

MONOGRAPH SERIES No 3

Published by

THE NATIONAL INSTITUTE OF SCIENCES OF INDIA

BAHADUR SHAH ZAFAR MARG, NEW DELHI

Under the auspices of

NATIONAL COMMISSION FOR THE COMPILATION OF
HISTORY OF SCIENCES OF INDIA

Price

Inland : Rs. 20.00

Foreign : £ 1-10sh., $ 3.60

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THE NATIONAL INSTITUTE OF SCIENCES OF INDIA

Designed & Printed by GRAFIKA

at Lakherwal Press, New Delhi

ACKNOWLEDGEMENTS

We are pleased to express our deep sense of gratitude to Prof Nurul Hasan of the Department of History, Aligarh Muslim University, Aligarh, for his guidance through all the phases of the production of this monograph.

Our special thanks are due to Dr. Salim Ali, F. N I of the Bombay Natural History Society, Bombay, Dr. S. Srinivasa Rao, F N I of Poona, Prof. Ram Behari, F N I. of Delhi and Dr Irfan Habib of the Department of History, Aligarh Muslim University, Aligarh, for going through the first draft of the manuscript and for a number of useful suggestions relating to the different sections of the monograph

We are specially grateful to the authorities of the Victoria & Albert Museum, London, Freer Gallery of Art, Washington, Metropolitan Museum of Art, New York and the National Museum, New Delhi as well as to Dr Ivanov of Institute of Peoples of Asia, Leningrad, Mme. Tatiyana Viladimirovna Grek of Hermitage, Leningrad and Dr Jaweed Ashraf of Botanical Institute, Leningrad, for supplying photographs or permission to reproduce them, and to Lady Cowasji Jehangir, Readymoney House, Bombay, for supplying the plates of a bird and for the permission to use them.

For providing us access to reference works and for the benefit of their opinions on the identity of various botanical items, we are thankful to Dr. Muhammad Farooq and Mr. Wazahat Hussain of the Department of Botany, Aligarh Muslim University, Aligarh

To Dr. Zakaurrab of the Government College of Agriculture, Srinagar we are indebted for the identification of some doubtful species of fruits and flowers of Kashmir.

Lastly we wish to acknowledge the services of Mr. Izhar-ul Hasan of the Department of Geography and Mr. Azmatullah Qureshi of the Department of History, Aligarh Muslim University, Aligarh, for typing respectively the English and Persian texts

None of those whose assistance has been of such value to us are of course responsible for any errors that may still remain.

LIST OF PLATES

I	The World of Animals	...	1
II	Birds with Dodo	...	16
III	Markhor	...	19
IV	Black Buck	...	22
V	Ibex	...	25
VI	Zebra	...	32
VII	Keeper Leading Lion	...	35
VIII	Man Leading Bear	...	38
IX	Aviary	...	41
X	Black Partridge	...	48
XI	Impeyan Pheasant	...	56
XII	Turkey Cock, Tragopan and Duck		64
XIII	Guineafowl	...	67
XIV	Cheer Pheasant	...	70
XV	Flamingoes	...	76
XVI	Dipper	...	81
XVIIA	A Bird	. .	83
XVIIB	Hornbill	...	84
XVIII	Whitebacked Vulture	...	89
XIX	King Vulture	...	92
XX	Himalayan Barbet	...	96
XXI	Tree Pie	...	105
XXII	Forktail	...	108
XXIII	Inflorescence	...	123
XXIV	Floricans	...	126
XXV	A Decorative Spike	...	130
XXVI	Spike of Nerium	...	138

CONTENTS

PREFACE		1
INTRODUCTION		4
DODO	A note by Dr. Salim Ali	15

PART I

MAMMALS

Wild Ram		
Ovis cycloceros	. . ..	20
Wild Goat		
Capra megaceros	... ...	22
Ibex	... ...	25
Capra aegagrus	... ...	27
Capra sibirica	... .	28

Antelope
Tetraceros quadricornis 31

Red Deer
Cervus elaphus maral 33

Yak
Poephagus grunniens 33

Zebra
Equus zebra 34

Slender Loris
Loris tardigradus 37

Monkey
Macacus cynomolgus 39

Langur
Semnopithecus entellus 40

Elephant
Elephas maximus 41

Polecat (mottled)
Putorius sarmaticus 42

Wolf
Canis lupus 43

Leopard (hunting)
Felis jubata 44

Tiger
Felis tigris 44

Miscellaneous 47

Freek Horn of a Wild Ram 47

Milk from a Gelded Goat 47

Milk of a Doe 48

Indian Python 48

Diet of King Cobra 49

Diet of Fish 50

Spider that Killed a Snake 50

Albinos 51

PART II

AVES

Pheasants 54

Francolinus asiae 54

Francolinus pondicerianus 55

Lophophorus impejanus 56

Breeding of a domesticated pheasant 57

Gallus bankiva 58

Tragopan melanocephalus 60

Tetraogallus himalayensis 61

Theleagris gallapova 63

Crane (demoiselle)
Anthropoides virgo 65

Florican (Bengal)
Houbaropsis bengalensis 65

Sarus
Antigone antigone 67

Dipper
Cinclus cinclus 78

Hawk-cuckoo
Hierococcyx varius 80

Koel
Eudynamis scolopaceus 81

Loriquet
Coryllis vernalis 83

Lammergeier
Gypaetus barbatus hemachalnus 85

Birds not Found in Kashmir 88

PART III

BOTANY

Saffron
crocus sativus 92

Oleander
Nerium odorum 93
Dhak
Butea frondosa 94
Lotus
Nymphaea stellata 95
Nelumbo nucifera 96
Champa
Michellia Champaca 97
Land Lotus
Hibiscus mutabilis 97
Hollyhock 98
Fragrant flowers of India 99
Flowers of Kashmir 100
Sensitive plant ... ...
Mimosa Pudica 103
Plantain
Musa sapientum 104
Musa paradisiaca 105
Notes on fruits of some regions : Kashmir, Kabul, Kishtwar. 105-111
Weight of a sweet cherry 112
Weight of a straw-berry 112
Weight of a peach 113

Weight of a lemon 114
Weight of a mango 114
Off-season fruition of mulberry 115
Prolongation of Mango season 116
Two crops of grape in one year 117
Record measurements of a banyan tree 118
Unusual features of a date-tree 119

Gardens : 121
Kabul 121
Agra 122
Kairana 123
Sihrand (Sirhind) 123
Ahmadabad 123
Kashmir 124
Lahore 124

PART IV

CHEMICAL TECHNOLOGY

Rose-scent 126
Sir beverage 126

PART V

MEDICAL PHENOMENA

Plague 129

Mad dog-bite 132

PART VI

ASTRONOMICAL DATA

ECLIPSE 136

Lunar (1610 A.D.) 136

Solar (1611 A.D.) 136

Solar (1614 A.D.) 137

Comet 137

Meteorite 139



PLATE I THE WORLD OF ANIMALS, School of Jahangir
Freer Gallery of Art, Washington D. C.

PREFACE

To naturalists, Jahangir (Mughal Emperor of India, 1605-1627) has been introduced through Dr. Salim Ali's article "The Mughal Emperor of India as naturalists and sportsmen" (*J.B. Nat. Hist. Soc.* Oct. 20, 1927). As we turn over the pages of the *Memoirs* of this illustrious king, the *Tuzuk-i-Jahangiri* (also called *Waqiat-i-Jahangiri* and *Jahangirnamah*) we come across descriptions of animals and plants providing as though, refreshing deviations from amidst of his somewhat monotonous narratives of political and court events. Occasionally we encounter also many observations on natural phenomena such as the appearance of meteors, descriptions of medical interest, such as the rabies; or rats being the carriers of plague, or accounts of industrial processes, such as manufacture of beverages, preparation of rose-scent or the smelting of meteorite iron for the making of swords and daggers. All these put together make interesting reading both for the curious layman as well as the scientist. The present monograph is planned chiefly in order to have all this material from Jahangir's Memoirs assembled at one place in a systematic form.

The monograph is divided into five sections : The first is comprised of thirty three major items on as many species of animals; the second concerns eleven species of plants (some represented by their fruits or flowers). In these sections, note has also been taken of Jahangir's incidental references, respectively to 36 species of animals and 57 of plants. The information given by Jahangir includes distinctive characters, ecology, anatomical notes, habitats, local names, weights and measurements.

With the panage of time, the *Tuzuk* seems to have undergone a lot of addition and alteration, which is evident from the numerous variations observed in the texts of the manuscripts preserved in Indian and foreign libraries. The point has been fully discussed by Mr. Dowson in the *History of India as told by its own Historians* (Vol. VI, Allahabad 1964, pp. 276-283). Of the two editions published by Nawal Kishore (Lucknow, no date) and Syud Ahmud (Ghazipur and Aligarh 1864), the latter is acknowledged to be the authentic version. All page references to the *Tuzuk* are drawn from this edition. Incidentally, the actual *Tuzuk* written by Jahangir himself until the 17th, and then by his Secretary Mutamad Khan under his own supervision, comes to an end at the beginning of the account of the 19th Regnal year. The later part, added by Mirza Muhammad Hadi in the 18th century has been omitted from the purview of the monograph.

We have tried to restrict our comments to the minimum. So far as possible the relevant information has been presented in its original form, giving under each item the original Persian text which follows the English translation in quotes. The translation is in part, based on that by Roger and Beveridge (2 volumes, London 1904 and 1914) which is generally faithful but at times inaccurate. Such errors as could be detected have been rectified.

Modern equivalents of the weights and measurements given by Jahangir have been calculated on the basis of the equivalents discussed in Appendices A and B in Irfan Habib's *The Agrarian System of Mughal India.* (Bombay 1963).

We have tried to arrange the first two sections (on Zoology and Botany) on the pattern followed in modern works of natural history. We have similarly given bibliographical references on

such species as have been more or less fully described or commented upon by Jahangir. Some of the works so listed have been used for supplementing the text with comparative notes.

The twenty six plates included are the reproductions of the paintings made by Jahangir's court-artists. The originals are preserved in various art galleries and museums of the world. It is regretted that due to some difficulties involved, all of these could not be presented in colour, or, as may be seen in the case of some, in the original colours. Unfortunately a number of paintings relevent to the text, which Jahangir says he ordered to be made could not be traced. Some of these seem to have been destroyed in the course of time, while others, though existing perhaps, are not within our reach. The lacuna is to some extent filled up by the inclusion of several others, not referred to in the *Memoirs*, but which, at any rate, form a part of Jahangir's overall contribution. One very valuable of these, is the portrait of a dodo, undoubtedly painted from a living specimen. Its full significance may be appreciated from the article which Dr. Salim Ali has kindly sent to us in response to our request, for publication in the monograph.

M. A. Alvi

A. Rahman

INTRODUCTION

Jahangir did not belong to the community of the scientists. Nevertheless, his *Memoirs* that form primarily a historical document of his reign, contain a good deal of information on natural history and science which, for its accuracy, meticulousness of observation and originality, could well qualify any author of his times to claims of such distinction. Jahangir maintained a big aviary and a menagerie, carried out observations, tests and experiments. Often he would order a specimen to be dissected in his presence, keep records for ascertaining long range phenomena and take down measurements and weights.

The painters of his court, especially Ustad Mansur, who held from him the title of Nadiru'l-Asr (unique genius of the time) excelled in the art of animal and floral portaiture. The surviving items from Jahangir's collection of the paintings, make a veritable catalogue of strikingly accurate representations, which can be of use even for the purposes of modern research.

Jahangir's interests were widely known. Foreign dignitaries, his own nobles, hermits, traders and commoners brought for him presents of animals from far and wide. This added to the variety of his knowledge. He speaks of the lorlquet of Malaysia, the African zebra, the mottled polecat of Afghanistan, the rare pheasants of the Himalayas, the Tibetan yak and the domestic turkey of Europe.

His intimacy with nature was far more extensive than the

Tuzuk reveals. The paintings which have survived the ravages of time show a number of birds and animals which do not find mention in the work. His establishment was full of all kinds of carnivorous beasts, hunting birds and domesticated species. The wider scope of the *Memoirs* permitting only a limited space, he speaks of them but selectively. The rarer ones interest him more. Only when he has to say something new, or to give his own opinion with regard to a popular belief, does he touch upon the commoner species, leaving out the distinctive features as common knowledge.

Jahangir has his own manner of description. His interest in zoology emanated from a pervasive aesthetic bent of mind. Often enough his narratives are characterised by an overtone of admiration for the beauty he found in his subject. Nor does he hesitate to express his feeling of repulsion for an ugly looking animal. Nevertheless, his descriptions are precise enough to make possible the correct scientific identification of the objects described. He gives local names, geographical distribution, even structural characteristics, weights, measurements and interesting notes on ecology and behaviour. His study of the sarus crane and the gestation period of the elephant represent two of his original contributions. In fact, modern zoologists, unaware of his work, had not correctly ascertained the latter phenomenon until the later half of the 19th century.

While the idea of any scientific classfication was unknown to Jahangir, an understanding of groups is given out in as much as he uses the world *Alam* (literally meaning 'the world of', but implying a specific category) rather loosely for indicating comparable affinities of two or more animals which we classify under the same family and in good many instances, the same genus. Sometimes a group is indicated by analogy drawn of a particular feature (viz.,

the bill, the size, the plumage, the coat of an animal or the like) with that of a closely allied species.

In botany, his interests were primarily horticultural. He tells us of having made it possible to cultivate high altitude trees like the cypress, juniper, pine and the Jawanese sandal tree in the plains of India (*Tuzuk*, p. 3) He laid out some beautiful gardens. An interesting piece of information given by him pertains to the availability of mangoes and the preservation of other fruits until long after the close of seasons. He compares the fruits and grains of various regions and notes down average and record weights of some of the specimens. The aesthete in him is not dormant either. The fragrant flowers of India catch his fancy at the very beginning of his narratives. He takes down detailed measurements of a date-tree "which looked exceedingly graceful", orders for a platform to be raised around it, and asks the painter to represent it in colour. Unfortunately, most of his paintings of plants, trees and flowers have been destroyed with the passage of time. The extent of this loss can be imagined from the fact, that of the more than a hundred paintings of Kashmir flowers, painted by Mansur alone, not one has survived to this day (see *Tuzuk*, p. 300).

His description of plants is not however very detailed. Generally he confines himself to specific aspects such as the trapping of the hornet in the lotus flower or the curious way the saffron sprouts from the soil.

The idea of groups is less evident in his treatment of plants. He identifies them by their fruits or flowers, or by their absence. Analogies given by him are superficial. He seems to be aware of some types of inflorescence but without realising their significance. The shapes and colours of the flowers interest him.

In one case he speaks of the stigma, in another case, of the stalk. But the relevance of the inner and outer components of the flower to its distinctive character is not understood. The shape of the leaf and the stem casually draw his attention but not sufficiently to be of consequence.

A strong propensity for all that is wonderful, novel or phenomenal, underlies his interest in other natural and scientific phenomena; and as he follows it up in the *Tuzuk* we are treated to a number of observations which could well have been worked upon towards really useful and conclusive information. There is a detailed description of plague, suggestive of the conditions under which it spreads. He speaks of a pair of elephants dying of rabies. Lunar and solar eclipses are recorded. The appearance and shape of a comet is meticulously observed over the period of a whole week.

Even in matters of day-to-day life, Jahangir displays a spirit of enquiry, which is more pronounced with respect to popular beliefs. He goes out of his way to measure the depth of a supposedly fathomless pond near Ajmer. Nowhere was it found to be more than twelve yards deep (*Tuzuk*, pp. 124-125). He despatches a team of his personal scribes with a surgeon to Banyan in order to check the authenticity of the belief that the body of one, Khwajah Yaqut, lying in a cave since the days of Mahmud Ghaznawi, had not decayed. The report is faithfully recorded. Half of the body that was in contact with the earth had undergone the natural process of decay. The rest was intact, including the nails and the hair of the head. The hair of the moustache and the beard on one side of the nose had fallen away. An epigraph, engraved on the entrance of the cave evidenced that the man had died before the days of Mahmud (*Tuzuk*, p. 56).

There are numerous examples of this kind. These do not form

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part of the text of the present work. However, it would not be without interest to quote at least two of his experiments in his own words.

The following experiment was carried out to test the degree of the agreeability of the atmosphere of Ahmedabad and Mahmudabad, to human health. He writes :

> "Undoubtedly the water and air of Mahmudabad have no resemblance to those of Ahmedabad. By way of testing this, I ordered them to hang up a sheep on the bank of Kankariya tank after taking off its skin, and at the same time one at Mahmudabad, that the difference of the air might be ascertained. It happened that after seven *gharis* had passed at that place (Ahmedabad) they hung up the sheep. When three *gharis* of day remained, it became so changed and putrid that it was difficult to pass near it. They hung up the sheep at Mahmudabad in the morning, and it was altogether unchanged until the evening, and began to be putrid when one and a half watches of night had passed. Briefly, in the neighbourhood of Ahmedabad, it became putrid in eight hours and in Mahmudabad, in fourteen hours". (Rogers, vol. II, London, 1914, p. 33).

With regard to the healing power of *Mumiya* (Bitumen), he observes :

> "I had heard much from physicians, but when I tried it, no result was apparent. I do not know whether physicians have exaggerated its effects, or whethr its efficacy had been lessened by its being stale. At any rate, I gave it to a fowl with a broken leg to drink in larger quantity than they said, and in the manner laid down by physicians, and rubbed some on the place where it was broken, and kept it there for three days, though it was sufficient to keep it from morning till

evening. But after I had examined it, no effect was produced, and the broken leg remained as it was. (*ibid*, vol.I, London, 1909, pp. 838-39).

At the same time Jahangir was often superstitious according to the fashion of time, thus his faith in astrology, then understood to be as real as any other science. But superstition went no further with him than taking auguries or carefully observing the advice of his trusted astrologers. It was co-existent and never confused with his innate rational sensibility. For instance the milk of a "strange gelded goat" is ominous for him as much as a shooting star but despite numerous witnesses, his intelligence would not agree to the widely believed story of a river having turned into a stream of milk (*Tuzuk*, p.175). Interested in mysticism, fond of the company of recluses, yet never intrigued by self-same demigods whose hoaxes he lays bare, he reveals a sagacious mind, resolved by its own disposition.

Jahangir's work may be appreciated better by keeping in the mind, a background of the state of science in contemporary Europe.

In the 17th century, science underwent a change of far-reaching consequences. It was then that the inadequacy of Aristotlian scholasticism which had dominated scientific thought for two thousand years, was substantiated and the first principles of experimental methodology were visualized. In this sense this period has been rightly called 'the cradle of modern science'

Essentially, however, it was a period of transition with all its characteristic merits and drawbacks. The system that we understand science as today was not perfected until after the 18th century researches finally clarified the basic contents of the truly scientific methodology. While the achievements of such great men

as Descartes, Vesalius, Harvey, Newton, Leibnitz and others, definitely point to the new directions, in many respects 17th century ideas appear to be little better than the extension of the medieval concepts.

Natural sciences in general and biology in particular were the latest to respond to this change of outlook. Not until the publication of Linnaeus' *Philosophia botanica* in 1751 and the 10th edition of his *Systema natura* in 1758, the principles of a scientific taxonomy were laid down.

While Linnaeus (1707-1788) had some original thinkers among his immediate predecessors, biologists of the younger generation, more or less contemporary to Jahangir, did hardly better than perpetuate the knowledge and therefore, the ignorance of the past. Thus J. Johnston (1603-1675) whose great zoological encyclopaedia was published in the sixties was merely copying Ulysses Aldrovandi (1552-1605) and Gesner (1516-1565) and through them Aristotle, in his classification of the vertebrates into viviparious quadrupeds, birds and fishes. Likewise his molluscs, testaceans, crustaceans, insects and zoophytes formed the category of 'bloodless' animals, the *anaima* of Aristotle. To him, as to his predecessors, bats were birds, the elephant was a soliped, the rhinoceros was a bisulc, the cetaceans were fishes, the amphibians and reptiles were oviparous quadrupeds, and the hippocampus (a mythical seamonster) was an insect.

Fable went hand in hand with fact and the literary history of animals passed for zoology. Superficiality of observation tended to degrade even the most painstakingly compiled works. Ill-conceived ideas about the habits of animals, their temperaments, cunningness, faithfulness, memory, usages, affection etc. occupy greater space in their works than do zoological characteristics.

The unicorn, the kraken, the basilisk, the harpies, the satyr and the stymhalid birds appear side by side with the real animals in their descriptions. Aldrovandi thought that the barnacle goose sprang from the fruit of a tree. Thomas Moufet (d. 1604) believed that the king of bees (which in fact is a queen) was an elected head and could be dethroned by popular vote.

Fantastic ideas like these were not wanting in the study of Botany either. Andrea Cesalpino (wrote 1590-1603) likened a plant to an animal standing on its head. So that, it had a soul seated in the heart which was situated in its collar between the roots and the stem; the sap was carried to its various parts through arteries and veins; the roots were the plants, mouths and the flower grew in a foetus membrane much as the foetus of an animal. The classical doctrine of 'signature', according to which medical plants were supposed to bear organic resemblance with the diseases they cured, found great favour with the 16th century botanists and continued to be enthusiastically defended in the 18th century. Giambatista della Porta (d. 1595) even illustrated by a diagram the resemblance thought to be existing between the leaf of *Botrychium lunaria* and the moon with the profile of a human face.

Classification was a matter of convenience with the medieval biologists rather than a scientific principle. At that stage, they could not have possibly apprehended that animals and plants partake a kind of hierarchy in nature's scheme of evolution which is the true basisof taxonomy. They followed various systems: alphabetical, animistic (based on the biblical conception of an order in which God is believed to have created the animals on the fifth and sixth days of creation), subjective, such as based on culinary considerations, on the degree of domestication of animals or on the medicinal properties of herbs and plants. The comparatively rational

systems such as were based on ecological, physical or generative analogies were uncritically followed in the tradition of Aristotle and his disciple Theophrastus, Instances of comparative studies in animal anatomy which, at any rate, were rare and unsystematic, are observed to have been carried out either to prove the 'Unity of God's plan' or as a homage to the wisdom of Aristotle, rather than for taxonomical reasons.

But these biologists too had their own share of contribution to make. The great task they accomplished was to bring within the compass of biological knowledge, a great number of species of animals and plants.

Even as early as the beginnings of the Renaissance, botany and zoology had grown in popularity with scholars who rediscovered the ancient Greek and Latin texts and wrote commentaries on them. Geographical discoveries and the opening of new land and sea routes in the 15th century gave it a new impetus. A large number of animals and plants of the European countries were identified. Exotic species began pouring in from Africa, Asia Minor, India, America, the East and the West Indies. Some scholars like Pierre Belon (1517-1564) and Andre Thevet (1503-1592) performed hazardous voyages in order to study foreign fauna and flora in their natural habitats.By the turn of the 16th century,the catalogue of a few hundred species of animals and plants studied by Aristotle, Theophrastus, Dioscorides and Pliny had swollen up to the encyclopaedic volume of several thousands. The collected zoological works of Francisco Hernandez alone were comprised of seventeen volumes. Among the great botanists, the names of Gherado Cibo who took eight years (1532-1540) to complete his great herbal, Clusius (Charles de L'Ecluse, 1526-1609) who described 1,585 plants in his *Rariorum plantarum historia* (1601) and of the Bauhin brothers, John and Casper, are worth mentioning. John's

encylopaedia, *Historia universalis plantarum* (1650-1661) contained the description of 5,226 plants. Casper, the more famous of the two, described as many as 6000 plants in his *Prodromus theatrica botanica* (1620). But Lobelius (Charles de l'Obel 1538-1616) did a unique job in his *Plantarum seu stirpum historia* (Last edition published by the author in 1581) which contained an index in seven languages. Linnaeus made extensive use of these works, returning to it time and again for reference.

Almost all the works produced in this period were illustratad, some exquisitely, by paintings, woodcuts, or copperplate etchings, reproduced in print and published either separately in the form of albums or in the body of the main works. Belon was the first to publish his album. Clusius, Gesner, Silviani, Fuchs, Aldrovandi, the Bauhin brothers, all had their works profusely illustrated. John's encyclopaedia contained 3,426 figures. Casper illustrated all of his 6,000 plants.

To sum up, through the endeavours of the European scholars, biological knowledge grew rapidly in the sixteenth and seventeenth centuries. But the existence of myth and fable, so persistently observed in their works, suggests that the biologists of the period had not as yet developed even a rationale, if not a truely scientific attitude. There was one relieving factor that was to be of great historical importance. they worked with increasing vigour, continuing to build, brick by brick, with corporate endeavour, a consolidated tradition of upto-date knowledge which was the prerequisite to the ultimate discovery of the true system of biological thought.

To return to Jahangir, there should be no reason for one to feel cynical about the dimunitive volume of his work, as compared to those of his western contemporaries. Not all the enormous

contents of the works of these scholars were entirely original, for they reproduced far more and often uncritically. Jahangir owed no debt to accepted authorities of whom there was no dearth in India. In the context of his times, however, he displays a good degree of rationality of approach.

As to its historical significance, Jahangir's work can by no means be said to represent the actual nature of contemporary scientific thought in India. A piece of unwitting scholarship, it was still the work of an amateur. But it does lead one to the speculation as to the worth of all that panorama of unrevealed history that lies burried on the shelves of the world libraries and museums. Unestimated number of specialised works on all the branches of science by Indian scholars of the past await to be studied. Were they all written in vain, or is it possible to trace in them any direction toward the emergence of a true scientific philosophy ? How did they lend themsleves to the growth of a tradition, or was there no uniform growth at all ? What is the nature and extent of their achievement or failure ? What role did they play in the international scientific movement ?

These are some of the questions Jahangir's work raises for us. A quest for the answers will, it is hoped, enlighten many a dark corners in the present picture of the world history of science.

DODO

A Note by Dr, Salim Ali

It has been aptly remarked about the Emperor Jahangir (1605-1627) that had he been the head of a natural history museum he would have been a better and happier man. The truth of this observation and of his high competance as a naturalist will be evident to everyone who reads this monograph, so ably compiled and annotated by the present authors. Jahangir may truly be considered the living prototype of the best kind of the later-day British sportsmen—naturalist in India to whom we owe so much for the scientific knowledge of the fauna and flors of the country that we posses today. His *Memoirs* are a veritable gazetteer of natural history of India of his day, the oustanding quality of his observations and descriptions being their first-hand character and their scientific accuracy. Most of his accounts are precise enough to permit unambiguous diagnosis of the organism concerued and their value is vastly enhanced by the superb suppporting illustrations which it was Jahangir's practice to get painted by Ustad Mansur or one of his school of gifted animal painters. Some examples of their works are reproduced in these pages.

In the political upheavals and rough-and-tumble that followed the disintegration of the Moghul Empire, we do not know how many of these priceless treasures got destroyed or looted by foreign adventurers. Fortunately a few of the miniatures have survived in private collections and museums within the country and abroad, some of them long buried in oblivion and only now slowly coming into the light.

One of such miniatures formed the subject of a paper given by a Russian ornithologist at the XII International Ornithological Congress at Helsinki, Finland in 1958'. Dr. A. Ivanov of Leningrad had stumbled on it in the collection of the Institute of Orientalistics of the USSR Academy of Sciences. The painting created something of a sensation among the gathered ornithologists since it depicted the extinct Dodo which, judging by the very lifelike presentation of the better known bird species accompanying it on the same plate, must obviously have been painted from a living model. When and where did this live dodo come from ?

The miniature, though unsigned and undated, is clearly in the unmistakable Mansur style and leaves no doubt that it is one of the series depicting strange and exotic animals that Jahangir was wont to get illustrated by his court painters immediately they came to his notice. However, in this case it seemed strange that, contrary to his usual practice, there should be no mention or descripton of the bird in his *Memoirs*, or of when or how it had come to his notice. And yet it seemed unbelievable that the uniqueness of the bird could have escaped his incisive observation and comment.

A plausible explanation for this unusual lapse has since been suggested by Prof. Erwin Stresemann, the doyen of international ornithology, who conducted a searching investigation through the relevant literaure[2]. It is on record that two live examples of the dodo, evidently brought from Mauritius, were kept at the East

1 See A. Ivanov, 1958: An Indian picture of the Dodo *Journal fur Ornithologie*, 99(4): 438-40.

2 For details see Stresemann, E., 1958: Wie hat die Dronte (*Raphus cucullatus L.*) ausgesehen? *ibid*. : 441-59. with a coloured Plate.

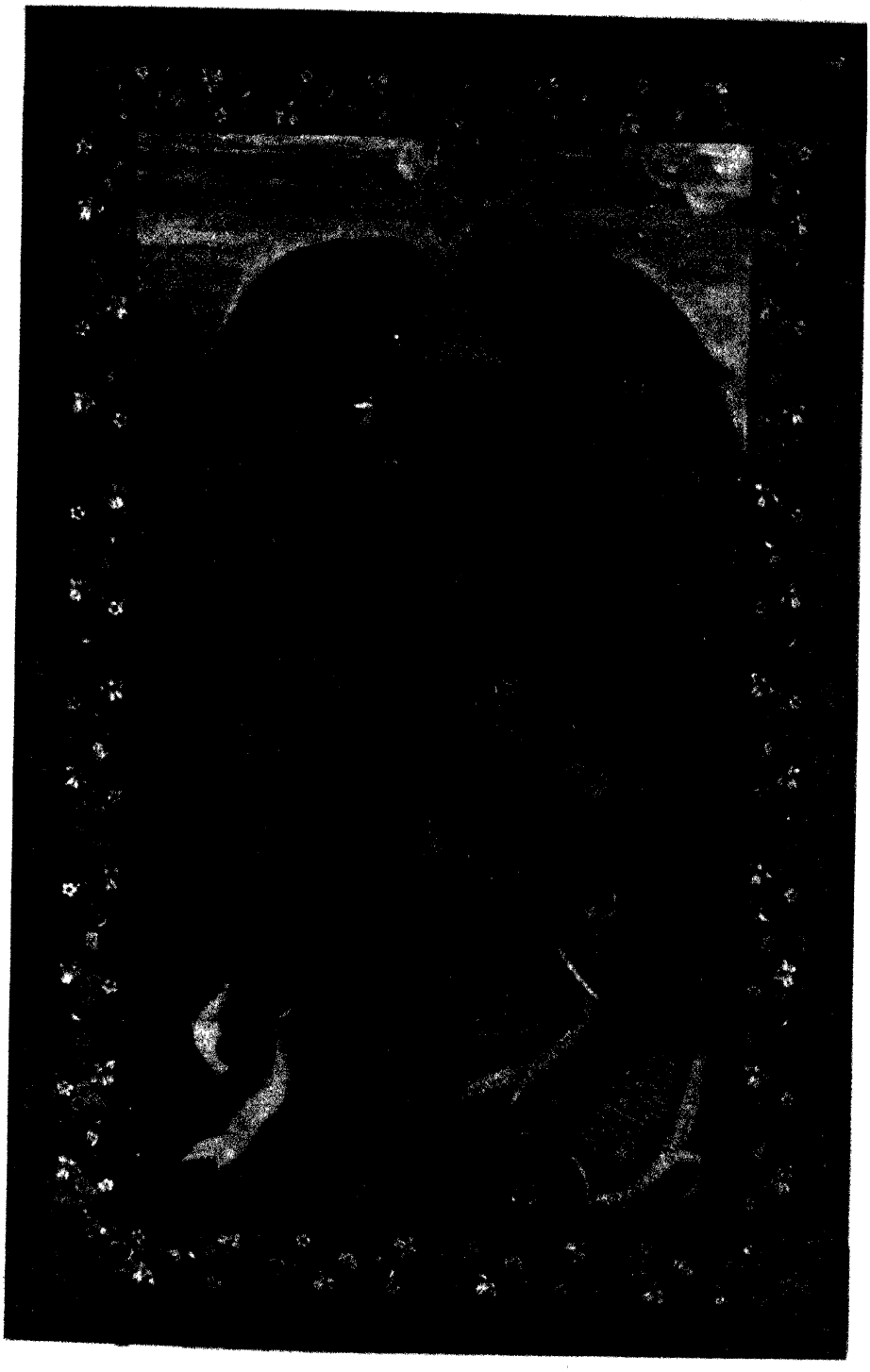


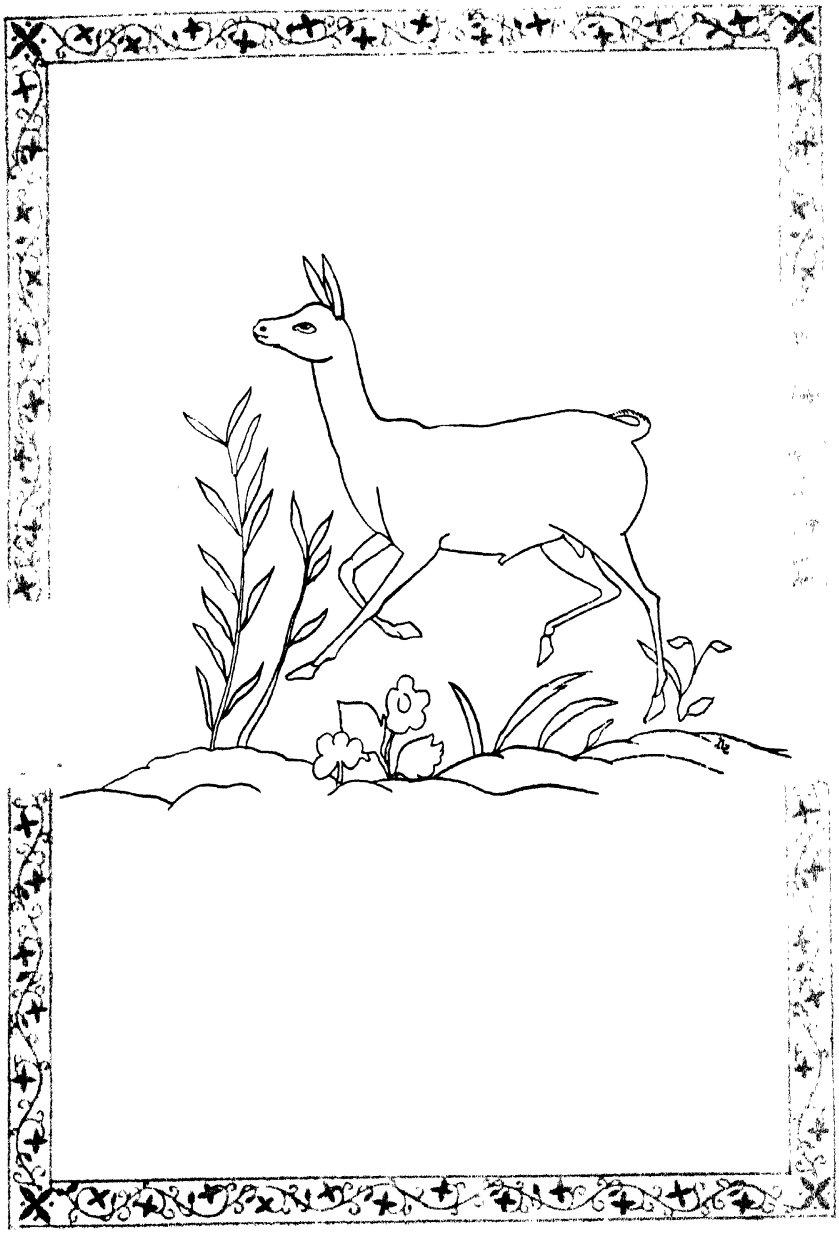
PLATE II

BIRDS, School of Jahangir.

Above left : Loriquet ; *right* : Tragopan ; *centre* : Dodo ; *bottom left* : Ducks ; *right*: Partridges. *Hermitage, Leningrad, through the courtesy of Institute of Peoples of Asia, Leningrad.*

India Company's factory in Surat where the chronicler Peter Mundy first saw and described them in 1628—11 months after the death of Jahangir. It seems more than likely that the Indian miniature represents one of the same birds as seen by Mundy. Or it could even be that perhaps there was a third bird in this batch which had been presented as '*nazar*' or '*peshkash*' by the factors of Surat to Jahangir, knowing his passion for strange and exotic creatures. This passion was so widely known at the time that foreign emissaries visiting the Moghul court took good care always to carry with them some curious or beautiful bird or beast from their country as an offering likely to please the Emperor most.

It may be recalled that Jahangir's *Memoirs* ended in 1624, three years before his death. All the evidence goes to suggest that the miniature of the dodo was most probably painted during this blank interval—between 1624 and 1627—and explains why the bird fails to find mention in the Emperor's chronicle. This portrait is considered by experts to be the most scientifically accurate one extant of the Mauritius Dodo (*Raphus cucullatus L.*) This flightless pigeon-like bird first became known to Europeans in 1598 and—thanks to the active gastronomic interest taken in it by visiting European sailors to Mauritius—became extinct in double quick time. The last living example was seen in 1681. The only other fairly accurate drawing of the bird, was made by a Flemish artist, Roelandt Savery, also from a live specimen that had reached Amsterdam almost exactly at the same period as the Indian miniature, i.e., between 1626 and 1628. All the other known drawings of the dodo by European artists are believed to be copied from, or inspired by Savery's original, varied and embellished to suit the taste and fancy of each artist.





PART I

MAMMALS

WILD RAM

Ovis cyclaceros Hutton

Urial or *Uria* in the Punjab; *Quch* in Afghanistan; *Kar* (male) *Gad* (female) in Sindh and Baluchistan; *Shapo* and *Sha* (male) *Shamo* (female) in Ladakh.

Sulaiman range, Punjab, Sikim, Bhutan, Tibet, Ladakh, Hazara hills. Vicinity of Peshawar, Kashghar and the Pamirs.

Hutton, *Calc. Jour. N.H.* (1842) ii, 514, pl. xiv; Sclater, *P.Z.S.* 1860, 127; *Ovis vignei* Blyth *P.Z.S.* 1840, 70.

"I have frequently heard from the hunters and those fond of the chase that at a certain time a worm develops in the horns of the wild ram which irritates him into fighting with his kind and that if he finds no rival, he strikes his head against a tree or a rock to allay the irritation. After investigation, the worm was found in the horns of the female sheep also, and since the female would not fight (on that account) the story does not seem to be based on truth."

از شکاریان و هوسناکان شکار مکرر شنیده ام که در شاخ قوچ کوهی
به وقت معین کرمی بهم میرسد که از حرکت او خار خاری درو
پیدا می شود که بانواع خود او را بجنگ در می آورد - و اگر از
نوع خود حریفی نیابد شاخ خود را بر درختی یا به سنگی زده
تسکین آن خار خار میدهد - بعد از تفحص آن کرم در شاخ

ماده آن جانور نیز ظاهر شد و حال آنکه ماده جنگ نمی کند پس ظاهر شد که این سخن اصلی نداشته است

(تزک ص ۴۰)

Sterndale states a similar fact about the ibex *(Capra aegagrus)* : "It appears to be very much troubled with ticks, and an oestrus or bot (fly) which deposits its larvae, in the frontal sinuses and the cavities of the horn". *Natural History of Mammalia of India and Ceylon, Calcutta* 1884, 449. Also see *infra* p. 27.

WILD GOAT

Capra megaceros Hutton

Markhor in Afghanistan, Punjab and South Kashmir; *Rawche* (female) *Rapoche* (male) in Ladakh.

Mountain districts of Afghanistan, Pir Panjal range, South Kashmir, Hazara Hills, the hills north of Jhelum river, Wardwan Hills, hills west of the Indus, the Sulaiman range, Ladakh, Baltistan, Gilgit, Chitral and Astor.

Hutton, *Calc. Jour.N.H.* (1842) ii, 535, pl. xx; Adams, *P.Z.S.* 1858, 525; Hume, *P.A.S.B.* 1874, 240. Sclater, *P.Z,S.* 1886, 317; Scully, *P.Z.S.* 1881, 209.

"The same Afghans (Shinwari Afghans) brought a hunted *markhor* goat the like of which I had never heard of or imagined. I ordered the painters to draw a likeness of this animal. It weighed four Hindustani maunds. The horns measured one and a half yards by the yard-stick".

همین افغانان بز مار خوری کشته آورد ند که مثل او ندیده بودم بلکه تخیل هم نکرده - مصوران فرمودم که شبیه اویکشند - چهار من بوزن هندوستان بود - درازی شاخ او یک و نیم گز بگز درآمد - (تزک ص ۵۴)

The 'Hindustani' maund was equal to 55.38 lb. which means that the markhor weighed 265.52 lb.



PLATE IV BLACK BUCK, probably by Mansur

The Metropolitan Museum of Art, New York ; purchase, 1955. Funds given by the Kevorkian Foundation supplementing the Rogers Fund.

The shape of the horns of the *markhor* differ from region to region and Colonel Kilnoch who noted at least four distinct varieties found the justification to classify their species accordingly (Sterndale, R.A., *Natural History of the Mammalia of India and Ceylon* 1884 p. 441). However, all *markhor* goats are now understood to belong to the single species, *Capra megeceros* or *Capra falconri* of Hügel. The Kabul *markhor* has the typical corckscrew pattern of horns, measuring upto a record length of 63 inches. The horns of the specimen referred to by Jahangir measured a little over 48 inches, one Jahangiri *gaz* being equal to 32.45 inches.

Pairing of Markhor Goats with Barbary Ewes

"In Ahmadabad I had two male *markhor* goats. As I did not have a female in my establishment to pair with them, it occurred to me that if these could be paired with the Barbary ewes from Arabia, especially those brought from the port-city of Darkhar (now called Mirbat) young ones of their form and quality might be obtained. In short I paired them with seven *Barbary* ewes. After six months each of the ewes had a young one at Fathpur, four females and three males, very pleasing in appearance and of good built and colour. Those that resemble the male *(Bukah markhor)* in colour have black linings on the back—like a dun—as well as red. They look more pleasing and beautiful than those having different colours and are more inclined to purity of breed".

در احمد آباد دو بکه مار خور همراه داشتم - چون ماده در سرکار نه بود که جفت توان کرد به خاطر رسید که اگر با بز بربری که در عربستان خصوص که از بندر شهر در خار می آرند جفت کرده شود اما نتاج آنها بچه شکل و شمائل بهم رسد - القصه با هفت

بربری ماده جفت فرموده شد و بعد از انقضای مدت شش ماه در فتحپور هر کدام یک بچه آوردند - چهار ماده و سه نر وبغایت خوش صورت و خوش ترکیب و خوش‌رنگ - و درین رنگها آنچه بر بکه مشابهت و مناسبت دارد مثل سمند خطها ی سیاه در پشت د اشته باشد و سرخ نیز - از دیگر الوان خوش رنگ و خوش تر می نماید و اصالت در و بیشتر ظاهر میشود -

(تزک ص ۲۷۱)

About the Hybrid Markhor

"A young one of a month or even of twenty days leaps from elevations and lands on the ground in such a manner that any animal other than goat, should it so leap...would have no limb left unbroken...One of their distinctive features, as compared to the ordinary kid is that the latter keeps wailing and fretting from the instant it is born, till it takes the (mothers') teats in the mouth and begins sucking milk, while the former utters no sound at all but keeps standing with utmost indifference and unconcern".

بچه یک ماه بلکه بست روزه به نوعی از جاها ی مرتفع جسته خود رابر روی زمین بر میگیرد که اگر غیر از بزغاله بجهد یک عضوش درست نخواهد ماند . . و یکی از خصوصیات و امتیاز اینها نسبت به بزغاله آن که بزغاله بمجرد زائیدن تا پستان به دهن گیرد و شیربخورد فریاد و اضطراب بسیار ظاهر میکند و این خلاف و اصلا آواز بر نمی آرد و در غایت استغنا و بے نیازی استاده می باشد -

PLATE V



A STUDY OF ANIMALS
At bottom is the Ibex - School of Jahangir.
Hermitage, Leningrad, through the courtesy of Institute of Peoples of Asia, Leningrad.

IBEX

Modern experts of Indian mammalia seem to be unaware of the term *rang* used by Jahangir for the ibex. Identification is however made possible by an incidental reference in the *Tuzuk* to its Kashmiri equivalent spelt as *Kale* or *kayl* which is the local name for the Himalyan ibex, *Capra sibirica*. But what Jahangir calls by the name of *rang* includes two species of the ibex found within the Indian subcontinent, the other being *Capra aegagrus*. This is evidenced by the following facts :

(1) While the habitation of *kayl* is known to be limited to the northern parts of the Himalayas, east of the Jhelum river, the *rang*, has been stated to cover also the mountain ranges of lower Afghanistan. The ibex found in this part of Afghanistan belongs to the single species, *Capra aegagrus* which is not found east of the Indus.

(2) *Capra aegagrus* has an intriguing resemblance with *Capra sibirica*. Sterndale, writing in the latter half of the 19th century, confesses having for a long time regarded them as one. (Sterndale *Natural History of the Mammalia of India and Ceylon*, Calcutta 1884, p, 448).

(3) The *Tuzuk* takes note of a distinguishing mark between the *rangs* of Kashmir and Afghanistan. The former is described to wear a coat overgrown with thick tuft. The latter has short hair. The difference is ascribed to diverse climatic conditions.

But the reason to class them as separate species lies deeper

in a distinction of a more technical nature. As a rule the horns of *Capra sibirica* are triangular in section with a flattish front, studded with uniform transverse knobs following in close succession. In *Capra aegagrus* the front rises like the edge of a thick blade; jagged instead of knobbed with the notches occuring irregularly, supposedly signifying the periodic record of the individual's growth. Jahangir seems to have overlooked this difference as a superfluous detail, especially since their likeness was too strong.

(4) Both the ibexes have been greatly admired by authors for their agility endurance and swiftness. But while the *kayl* is generally more difficult to kill, its western counterpart can be hunted by dogs. These dogs are of special kind, swift, aud trained for hunting *Capra aegagrus*. Danford writes," "though the agility of *C. aegagrus* is marvellous among the rocks, they do not, according to Mr. Hutton, possess sufficient speed to enable them escape from the dogs which are employed to hunt them in the low lands of Afghanistan". (*P.Z.S.* 1875, 458).

As against this, there is a statement by Colonel Markham about *C. sibirica*, He describes it as "an extremely wary animal which can make its way in an almost miraculous manner over most inaccessible-looking grounds." "No animal", he adds, "can exceed the ibex in endurance and agility." (vide Sterndale *ibid.* p. 445).

Among all the narratives containing acconuts of his hunting expedition, the only passage showing Jahangir having made use of dogs relates to the *rang* of Afghanistan. He killed twenty four of them on his way back from Kabul and a good number was hunted by dogs. The point he emphasises in this account corroborates with what Hutton has said about *C. aegagrus* and its susceptibility to a dog's chase.

Capra aegagrus

C. Hircus Hume

THE PERSIAN WILD GOAT

Pasang (male), *Buz*, *Buz-i-Pasang* (female) in Persian, *Rang*, *Borz* in Afghanistan, *Saira*, *Sarah*, *Pashin*, *Pachin* in Baluchistan, *Chank* (male) *Hit*, *Haraf* (female) in Brahui, *Ter*, *Sarah* in Sindhi.

Baluchistan, Afghanistan (lower), Western Sindh. It is not found to the east of the Bolan Pass, Quetta and the Indus. The animal inhabits elevations of from the sea level to 5000 ft. high.

Hutton *Cal. Jour. N.H.* (1842) ii, 521, pl xix; *J.A.S.B.*, xv, 161; Danford, *P.Z.S.* 1875, 458; Blanford *J.A.S.B.* xliv, pl. 2, 15; *Blyth Cat.*, 176; Sclater *P.Z.S.* 1886, 315, pl. xxxi; *W. Sclater Cat.*, 142; *Capra blythi* Hume, *P.A.S.B.* 1874, 240; *Capra Caucasica* Adams, *P.Z.S.* 1858, 525.

The bezoar stone believed to be an antidote to poison develops in the stomach of this animal. Its formation makes it sick and emaciated resulting in death.

The following passage occurs in a narrative pertaining to the king's hunting expedition in Southern Afghanistan.

"I had not till now (2nd year of succession) seen a *rang* antelope. It is in truth a wonderful animal of a beautiful shape. Altho-

ugh the black buck of Hindustan looks very finely made, the shape and fashion of this antelope is unique. I ordered a ram and a *rang* to be weighed. The ram weighed a maund and thirty three seers. With this much size a rang ran so (fast) that ten or twelve swift dogs caught it with a hundred thousand difficulties after they were absolutely worn out. Next to the sheep and the barbary goat, there is no flesh more delicious than that of a rang antelope."

تا حال (چشن سال دو ئمیں) من آهوی رنگ را ندیده بودم - الحق که عجیب جانور خوش شکل است - اگرچه آهوی سیاه هندوستان خوش بست بنظر در می آید - غایتا این آهو را بست و ترکیب و نمودی دیگر است فرمودم که قوچے و رنگی را وزن کردند - قوچ یک من و سی و سه سیر برآمد و رنگ دو من و ده سیر - رنگے با ین کلانی چنان میدوید که ده دوازده سگ دونده تیز تگ بعد ازاں که مانده شده بودند به هزاران محنت گرفتند - از گوشت گوسفند و بز بربری گذشته گوشتے به لذت آهوی رنگ نمی باشد (تزک ص ۵۸)

Respective weights of the ram and the ibex : 101.06 and 124.6 lb avd. approximately.

Capra sibirica

THE HIMALAYAN IBEX

Kale or *Kayl* in Kasmir: *Buz* in Kunawar; *skin* in Balti. *Skin* or *Sakin* (male) *Dabmo* or *Danmo* (female) in Ladakh. *Tangrol* in Kulu.

North Kashmir except in Pir Panjal; the sources of the Ganges. Spiti, Baltistan, Ladakh, Kunawar, Kulu. It is not found

west of the Jhelum river. Blanford says that it occurs in the Himalayas ranging from Herat to Kumaon. But he seems to have confused the numerous hybrids in Afghanistan with *Capra sibirica*. (F.B.I. Mam. 1888, p. 504; Prater *The Book of Indian Mammals*, 1962, p. 216). Except in severe winter the animal never descends down the snow-line the lowest range being 12,000 ft.

Meyer, *Zool. Annal* (1794) i, 397; Blanford, *Sc. Results Yar. Miss.* II, *Mam.*, Cal. 1879, 86; Scully *P.Z.S.* 1881, 208; Blyth *Cat.* 176; W. Sclater *Cat.*, 143; *Himalayan ibex*, Blyth *P.Z.S.* 1840, 80; *Capra sakeen* Blyth, *J.A.S.B.* (1842) xi. 283; *Capra Himalayana* Adams *P.Z.S.* 1858, 523.

Since the author of the *Tuzuk* has assumed both the varieties of ibex as belonging to the single species called *rang*, *Capra sibirica* does not find separate treatment. The description given to the *rang* is therefore applicable to both.

It is however in the following two passages that much of the information leading to the distinction occurs. By describing the character of the horns the first passage separates the *rang*, from the rest of the wild goats. In the second, differentiation is made between the *rang* of Kashmir and its counterpart across the Indus. The three passages put together supply us with the necessary information regarding their common points of general nature such as appearance, weight, agility, speed, horns—and their respective details of technical importance: the character of their coats, of hairs, their habitats, climatic conditions.

1

"The *rang* resembles the mountain goat. Distinction lies in

the horns. The horns of a rang are curved and the horns of the goat, straight like a corckscrew".

رنگ به بز کوهی می نماید - تفاوت بز بر همیں شاخ است -
شاخ رنگ خمدار است و شاخ بز راست مارپیچ (تزک ص ۵۲)

2

Rang goats had been brought from the land of Bakr and the plateau of Garm ser. They were exceedingly handsome and wore short hair. Those available in these mountains (Kashmir) are full of hairs due to extreme cold and are very ungainly of appearance. The Kashmiris call *rang* by the name of Kayl (not *kapl* or *kapil* as in the text which is obviously an error of printing).

بزرنگ از ولایت بکر و کوهستان گرم سیر آورده بودند و بغایت خوبصورت و کم پشم بود و آنچه درین کوهستان (کشمیر) بهم می رسد بجهت شدت سرما و برف بسیار پرموی و بد هیات است و کشمیریاں رنگ را کیل می گویند - (تزک ص ۳۰۲)

ANTELOPE

Tetraceros qudricornis

Chawsingha, Chowka in Hindi; *Bhir-kura* (male), Bhir (female) in Gondi; *Kotri* in Bustar; *Kondguri* in Canarese; *Kondaguri* in Telegu; *Bhirul* in the Bheel dilect.

Throughout India.

Blyth, J.A.S.B. XVI, 879; *Ibid.* XVII, 561; Adams, P.Z.S. 1858, 522.

"On the road to the village of Qasim Khera in the province of Malwa, a white animal was killed which resembled the *Kotah-paynh* (*Hyelaphus porcinus* Zimm.). It had four horns, two of which were opposite the extremities of its eyes and two finger-breadths in height, and the other two horns, four finger-breadths towards the nape of the neck, were four finger-breadths in height. The people of India call it *Dudhariya.* The male has four horns and the female none. It was said that this kind of antelope had no gall-bladder; but when the contents of its inside were examined the gall-bladder was apparent and it became clear that the belief is baseless."

دو اثنائے راہ (قاسم کھیرہ) جانوری سفید ی شکار شد کہ از عالم کوتاہ پایہ بود - غایتا چہار شاخ داشت - دو شاخ کہ بہ محاذ ی دنبالہ چشم او واقع بود دو انگشت بلندی داشت - دو شاخ دیگر بہ فاصلہ چہار انگشت کہ بجانب قفا بود چہار انگشت بلند ی

داشت - اهل هند این جانور را دو دهاریه گویند و مقرر است که نران چهار شاخ و ماده آن شاخ ندارد و چنیں مذکور شد که نوع این آهو زهره نمیدارد - چون احشای درون او را ملاحظه کردند زهره ظاهر شد و معلوم گردید که این سخن اصلی نه اشته است
(تزک ص ۱۷۴)

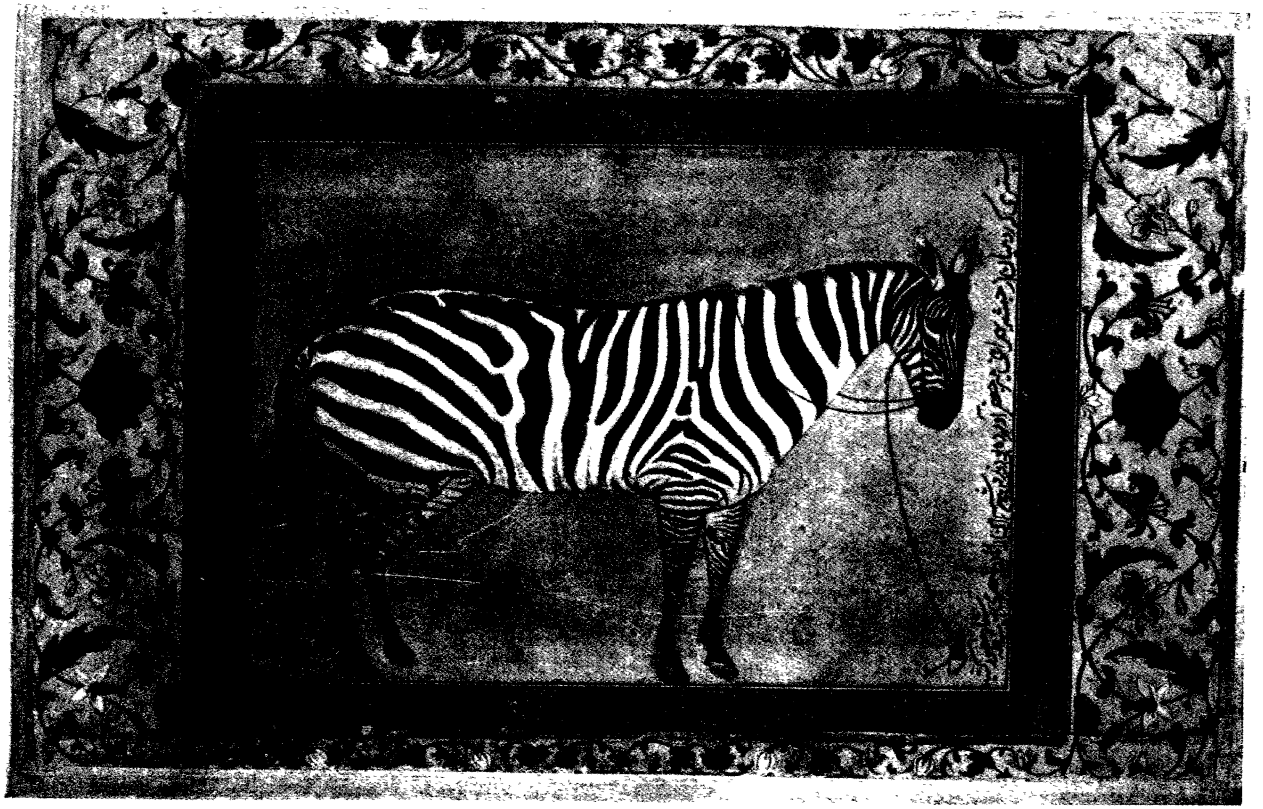


PLATE VI

ZEBRA by Mansur
Victoria and Albert Museum, London.

RED DEER

Cervus elaphus maral ?

"Passing on from Rohtas, the hills of which contain these antelopes, red deer of this description is not found any where in the whole of Hindustan, except Girjhak and Nandanah. I ordered them to catch them in order that a few might reach Hindustan for breeding purposes."

(Girjhak and Nandanah were the same as old Jalalpur in the salt range and the modern district of Jhelum. See Jhelum Gazetteer 1904, p. 67. Babar mentions both these places as one. Elliot and Dowson V, p. 114).

از رهتاس که کوه ها ی آن ازین آهو دارد گذشته سوای کرچهاک و نذد نه در تمام هندوستان جا ی دیگر زین نوع آهوی سرخه نیست گفتم چندی راگرفته نگاه دارند که شاید چند ی از آنها بجهت تخم زنده به هندوستان برسند . (تزک ص ۶۱)

YAK

Poephagus grunniens Grey

Yak in Tibetan Ladakh and in north Kumaon, *Dong*, *Brongdong* (wild) *Pegu* (tame) in Tibet; *Ban Chaur* in Hindi; *Kotass* in the Kirghizi language; *Quch gaw* in Persian.

The plateau of Tibet at elevations of from 14,000 to 15,000 ft. in summer; part of Kansa province of China. Within Indian limits wild Yak is found only in northern Ladakh, specially in Cheng Chenmo.

Hodgson *J.A.S.B.* x, 449 and 912 and xi, 282 and xvi, 708; Adams *P.Z.S.* 1858, 529.

"Two Yaks from among the presents given by the chief Zamindar of Tibet were seen by me. The Yak has a face and built closely resembling the buffalo. Its body is covered with a thick growth of (long) hair; and this is a peculiarity of the animals of cold climate.

دو گاو قطاس از پیشکشهای زمیندار تبت بنظر در آمد - در صورت و ترکیب بد گاو میش بیشتر مشابهت و مناسبت دارد اعضائش پر بشم است و این لازمه حیوانات سرد سیر است -
(تزک ص ۳۰۲)

ZEBRA

Equus zebra

On the occasion of the 16th anniversary of his accession Jahangir received numerous presents from far and wide. Among them was a Zebra. He had never before witnessed one of the kind. He took it to be a kind of wild ass, *Gorkhar*. He was not too wide off the mark. The wild ass and the Zebra are both



PLATE VII KEEPER LEADING LION by Padarath

The Metropolitan Museum of Art, N. York, purchase 1955. Funds given by The Kevorkian Foundation Supplementing the Rogers Fund.

classified under the single genus *Equus*. The present was reserved by the emperor to be sent to Shah Abbas of Persia.

Four different species of the zebra are known to exist. *Equus Zebra* or the true mountain zebra is found in cape colony and Angola. The individual mentioned above seems to belong to this species. It has black stripes on a white ground, running transversely on either side of the median dorsal line and about the whole body and legs leaving the abodmen and the inside of the thighs white, *Equus gravpi* lacks the transverse lines and has stripes on the abdomen. The other two, *E. burchelli* and *E.b. boemi*, radically differ from the above specimen in that the ground colour of their coat is pale buff.

"At this time (on the day of the 16th accession anniversary) I saw a wild ass, exceedingly strange, stripped exactly like the black and yellow tiger, except that this is black and white. From the tip of the nose to the end of the tail and from the lobe of the ear to the top of the hooves, black stripes, large or small according as it suited to various parts bedecked its body. Black lines ran gracefully around its eyes. One might say that the painter of fate has with the pen of novelty bequeathed to the album of existence a masterpiece. As it was exceedingly strange some were prone to doubt that it had been coloured. After enquiry into the truth, it beceme certain that (the lines) were by the creator of the world. As it was a unique thing, it was reserved among the presents to be sent to my brother Shah Abbas".

دریدولا گورخری بنظر درآمد بغایت غریب و عجیب بعینه مانند ببر سیاه و زرد است - این سیاه و سفید از سر بینی تا انتها ی دم و از نوک گوش تا سرسم خطهای سیاه مناسب جا و مقام کلان و خورد به قرینه افتاده و گرد چشم خط سیاه در غایت لطافت کشیده - گوئی نقاش تقدیر به قلم بدائع نگار کارنامه در صحیفه

روزگار گذاشته از بسکه عجب بود بعض را گمان آن بود که شاید رنگ کرده - بعد از تحقیقات به یقین پیوست که از خداوند جهان آفرین است - چون نادر بود داخل سوغات ها ی برادرم شاه عباس نموده شد (تزک ص ۳۲۷-۲۸)

SLENDER LORIS

Loris tardigradus Linn

Loris gracilis Geof.; *Stenops gracilis* Kelaart, *Loris ceylonicus* Fisher; also called slender lemur.

Devanga in Telugu: *Tevengu* in Tamil; *Ching-kuli* in Coorg; *Una Happolava* in Sinhalese.

South India and Ceylon.

Kelaart, *Prodromus Fauna Zeylanicae* Ceylon 1158, 9.

The races of slender loris are distinguished as dry-zone and wet-zone forms—the former being larger. The one described by Jahangir is apparently smaller. It eats berries of lantana bushes, fruits, insects, birds, eggs, lizards, small birds and tree frogs, is fond of honey and syrup. According to Jahangir it eats plantains too and drinks milk, of which, observes Mr. Philip, he grows specially found in the state of captivity when it would not touch small mammals. (F.B.I. Mammalia, Lond. 1939, p. 185.).

"A dervish from Ceylon came and brought a unique animal, Devnak by name. Its face was exactly like a large bat and the whole shape was like that of a monkey. But it had no tail. Its movements were like those of the black tailless monkey which they call *ban manush* in Hindi. Its body was of the size of a young monkey, two or three months old. It had been with the dervish

for five years. It appeared that the animal would not grow larger. Its food is milk and eats plantains also. As the creature appeared very strange to me I ordered the artists to draw a likeness of it in different poses. It has a somewhat repulsive appearance."

درویش از سراندیپ آمده جانوری غیر مکرری آورد دیونک نام - روی پشت بره کلان مشابهت تمام دارد و هیئات مجموعی او به میمون شبیه است - اما دم نه دارد و حرکاتش به میمون سیاه بے دم که بزبان هندی بن مانس می گویند می نماید جثه او برابر میمون بچه دوسه ماهه باشد - پنج پیش این درویش بوده است معلوم شد که ازین کلان تر نمی شود خورش او شیراست - کیلهم میخورد و چون بغایت عجیب نمود به مصوران فرمودم که شبیه او باحرکات مختلفه کشیدند - خیلے در نظرها کریهه می نماید . (تزک ص ۶۸)



PLATE VIII MAN LEADING BEAR by Govardhan
The Metropolitan Museum of Art, N.York, purchase 1955. Funds given by The Kevorkian Foundation Supplementing the Rogers Fund.

MONKEY

Macacus cynomolgus ?

Kora in Malay Tenasserim Nicobar Malay Archipelago.

"He (Muqarrab Khan) has also brought a monkey of a strange and wonderful form (from Goa). Its hands, feet, ears, and head are like those of a monkey and its face like that of a fox. The colour of its eyes is like that of a hawk's, its size is comparatively larger. From its head to the end of its tail, it measures an ordinary cubit. (32.45 inches) It is shorter than a monkey but stands higher than a fox. Its hairs are like the wool of a sheep, and the colour is ashy. From the lobes of its ear to the chin it is red like wine. The tail is two or three fingers larger than half a cubit. Quite different from other monkies, the tail of this animal hangs down like the tail of a cat. Sometimes it utters a sound like a young antelope. In short it is a very strange animal.

(مقرب خان) دیگر میمونے (از گووہ) آوردہ بود بہ ہیئت غریب و شکل عجیب است و پاو گوش و سر او بعینہ میمون است وروی او بہ روی روباہ مینماید رنگ چشمہای او برنگ چشمہای باز لیکن از چشم باز کلان تر است - از سراو تا سر دم یک درع معمول بودہ است - از میمون پست تر و از روباہ بلند تر است پشم او بطریق پشم گوسفند و رنگ او خاکستری است از بنا گوش تازنخ سرخ است میگون - دم او از نیم درع دو سہ انگشت دراز تر غایتا بہ خلاف دیگر میمو نہا دم ایں جانور افتادہ است بہ طریق دم گربہ - گاہی آوازی از و ظاہر میشود بطریق آواز آہوی برہ . مجملہ خیلے غرایب دارد (تزک ص ۱۰۵)

LANGUR

Semnopithecus entellus Blyth

Langur, Hanuman in Hindi, *Pahari, Dendoa* in the Himalayas, *Gooni* in Kumaon, *Sahoo Kabu* in Lepcha; *Propyaka* in Bhutia, *Wana* in Marathi; *Vandra* in Gujrati, *Musya* in Kanarese; *Koda* in Coorg, *Kondamuchu* in Telugu; *Sara* in Korku (Satpura hills).

The whole of India except Panjab and Sindh.

Hutton *P.Z.S.*, 1867, 944; Anderson *Ann. Zoo. Res*, 15; Elliot, Blyth, *J.A.S.B* xiii, 470 and xvi. 733 (vide *Semnopithecus anchises*).

The true white langur is limited to Ceylon, where it is found on very high elevations. Our identification is roughly based on the presumption that the objects of Jahangir's distinction are the common monkies *(Macacus rhesus)* and the common langurs. The latter vary largely in colour, ranging from almost black in the northern zone to almost white in the Deccan. The contrast, of course, is not as sweeping but restricted to wide patches on the head and the limbs.

"Langur is an animal belonging to the monkey tribe. But the hair of the monkey is yellowish and its face red, while the hair of the langur is white and its face is black. Its tail is twice as long as that of the monkey".

لنگور جانوریست از عالم میمون غایتا موی میمون به زرد ی مائل
ورویش سرخ و موی لنگور سفید ورویش سیاه و دم لنگور سفید
دو چندان از دم میمون دراز است (تزک ص ۲۲۱)



PLATE IX AVIARY, School of Jahangir
Freer Gallery of Art, Washington D.C.

ELEPHANT

Elephas maximus

"A female elephant in the royal stud gave birth to a young one in my presence. I ordered them again to ascertain the period of their gestation. It turned out finally that a female young one remains for one year and six months in the mother's womb and the male for nineteen months. As against the birth of human beings which, in most cases, is by head delivery, young elephants are usually born with their feet first.

ماده فیلے از فیلخانه خاصه در حضور من زائیده - مکرر فرمودم که تحقیق مدت حمل نمایند - آخرالامر ظاهر شد که بچه ماده یک سال و شش ماه و بچه نر نوزده ماه در شکم مادر می ماند - بخلاف آدمی که اکثر بچه از شکم مادر به سرفرو می آید و بچه فیل اکثر به پا برمی آید (تزک ص ۱۳۱)

According to Blanford (*Fauna of Br. Ind.*, Mam. p. 466) "the period of gestation has been ascertained to be about 19 months." This is about the Indian elephant, *Elephas maximus*. But different observations have been recorded by other authorities viz. ranging from 18 to 22 months. For further references on gestation period see Heysham, *P.Z.S.* 1865, p. 731 and 1880, p. 23; Campbel *P.Z.S.* 1869,p. 139; *P.Z.S.* 1880, p. 222.

POLECAT (Mottled)

Putorius sarmaticus

Common in South Afghanistan, Quetta, Kandhar and Pishin hills north of Quetta. Also found in Eastern Europe and parts of Western Asia, generally very rarely.

Hutton *J.A.S.B.* xiv, 346; Blyth *Cat.*, 68

About *Putorius sarmaticus* very little seems to have found record in Europe. It is chiefly nocturnal, feeds on rats, birds, mice and lizards and is excessively sanguinary. It lives in burrows probably made by rats. The upper parts are variegated giving it a piebald appearance and appears to be closest to the description by Jahangir.

"At this place (Girami, south of Kabul) they brought to show me a piebald animal like the flying squirrel (*Hylopetes alboniger*, the particoloured flying squirrel) which they call in Hindustani tongue as *Gilehri* and said that mice would not frequent the premises of the house where this animal was. On this account they call it *Mir-i Mushan* (master or monitor of the mice). As I had not seen one before. I ordered my painters to draw a likeness of it. It is larger than a mongoose. On the whole it is very like the civet cat".

و درین منزل (گرامی جنوب کابل) جانور ابلق به شکل موش
پران که بزبان هندی گلهری میگویند آورده به نظر گذرانیدند و

چنین گفتند که در خانه که این جانور میباشد موش پیرامون آن خانه نمی گردد باین تقریب این جانور را میر موشان میگویند - چون تا حال نه دیده بودم به مصوران فرمودم که شبیه آن را بکشند - از راسو کلان تراست - غایتا به گربه مشکین مشابهت تمام دارد - (تزک ص ۵۰)

WOLF

Canis lupus Linn

Bherya, Nekra, Bighana, Hundra *Lamdagh* in Hindi; *Tola* in Kanarese, *Toralu* in Telugu.

Distributed about all over India.

Prater The Book of Indian Mammals, p. 196.

"Mirza Rustam had killed a male wolf. I wished to see whether its gall bladder was in its liver like that of a tiger or outside the liver as in other animals. After examination it was found that the gall bladder of this animal also happens to be inside the liver."

گرگ نرے مرزا رستم شکار کردہ بود - میخواستم که ملاحظه نمایم که زهرہ او به طریق زہ شیر در درون جگر واقع است یا مانند جانوران دیگر در بیرون جگر دارد - بعد از تفحص ظاهر شد که زهرہ او هم در درون جگر میباشد (تزک ص ۱۷۹)

LEOPARD (Hunting)

Felis Jubata

"It is a fact that the hunting leopards do not pair in places other than their habitats. So that, my revered father once collected together 1,000 leopards. He was very eager that they should pair, but this in no way come off. Several times the male and female hunting leopards were brought together unchained in the gardens. But there too they did not pair. Recently it happened that a male slipped off its collar, approached a female and paired with it. After two and a half months three cubs were born. They grew up. As it appeared strange the event was recorded.".

یوز مقرر است که در غیر جاهای که میباشد به ماده خود جفت نمی شود چنانچه والد بزرگوارم یک مدتے تا هزار یوز جمع کرده بودند بسیار خواهان آن بودند که اینها با یکدیگر جفت شوند اصلا نمی شد و بارها یوزهائے نر و ماده در باغات قلاده برآورده سر دادند در انجامهم نشد درین ایام یوز نر ی قلاده خود را گسیخته بر سر مادهٔ یوز می رود و جفت می شود - بعد از دو نیم ماه سه بچه زائید و کلان شد و چون فی الجمله غرابتی داشت نوشته شد (تزک ص ۱۱۸)

TIGER

Felis tigris

"Not only the leopards do not pair together, tigers too have never been likewise heard to pair after being taken captive. Since

in my time wild animals are rid of their feeling of estrangement—the tigers are tamed to the extent that free of chains and shackles, they roam around among people in groups, hurt no one nor feel wild or frightened—it was just a freak that a tigress became pregnant and after three months bore three cubs. Else, it has never happened that a wild tigress paired with its male in captivity."

هر گاه یوز با یوز جمع نگردد - شیر خود به طریق او هر گز شنیده نه شده بود که بعد از گرفتاری جفت شده باشد - چوں در عهد دولت من وحشت از طبیعت جانوران صحرائی برداشته شد چنانچه شیران بر نوعے رام گشته اند که بے قید و زنجیر گله گله درمیان مردم میگردند و ضرر ایشان بمردم نمیرسد و نه وحشت و رمیدگی دارند - بحسب اتفاق ماده شیری آبستنه شد و بعد از سه ماه سه بچه زائید و آں هرگز نشد که شیر جنگلی بعد از گرفتاری به جفت خود جمع شده باشد (تزک ص ۱۱۷)

Milking the tigress

"It had been heard from the physicians that the milk of a tigress was of great use for eyesight. However much we tried that the moisture of milk should appear in her breasts, it was to no avail. I reckon that since it is a ferocious animal and that in the breasts of mothers milk appears by reason of the affection they have for their young, it is when the cub begins to suck that in the breasts of the tigress, blood gets converted into milk. So that at the time of holding the tigress for the purpose of milking, its rage grows and the milk dries up in the breasts."

از حکیمان شنیده می شد که شیر شیر به جهت روشنائی چشم بغایت فائده مند است - هر چند سعی کردیم که نم شیر در پستان او ظاهر شود میسر نگشت - بخاطر میرسد که چون جانور

غضبناک است و شیر در پستان مادران از روی مهری که به بچه خود دارند خون در پستان او مقارن کلیدن بچه شیر میشده باشد تا در وقت گرفتن او به جهت بر آوردن شیر غضب او زیاده گشته شیر در پستان خشک میشود - (تزک ص ۱۱۷)

MISCELLANEOUS

1. Freek horn of a wild ram

Ovis

"The Shinwari Afghans brought a mountain ram, the two horns of which had become one like the horns of a rang (*capra Ibex*).

افغانان شنواری قوچی آوردند که هر دو شاخ او یکے شده بود - به شاخ آهوی رنگ مشابهت داشت (تزک ص ۵۴)

(See also *Ovis cyclaceros* on p. 20)

2. Milk from a gelded goat

"One of the Banyans who are a particular community ("probably the same as the hindu caste of Banya) brought before me a gelded goat that had mammae like that of a female and gave every day sufficient milk to take with a cup of coffee. As milk is one of the blessings of Allah and a source of nourishment to many animals, I looked upon this affair as an omen for good."

یکی از بانیان که قبیله مقرر اند بز خصی به نظر گزرانید که بطریق بز ماده پستان داشت و مقدار یک پیاله قهوه خوری هر روز شیر میداد - چون شیر از نعمتهای الهی است و ماده پرورش بسیاری از حیوانات است این امر را شگون نیک دانستم

3. Milk of doe

"On this day (in September 1608) they brought a female milch doe which allowed itself to be milked without difficulty. It gave 4 seers of milk every day. I had not seen or heard of such a phenomenon. In taste, the milks of the doe, the cow and the buffalo do not differ in any way. It is said that it is beneficial in asthmatic condition."

دریں روز مادہ آهوی شیر دار آوردند که بفراغت میگذاشت که اورا میدوشیدند و هر روز چهار سیر شیر ازو دوشیده میشد تا غایت دیده و نشنیده بودم - مزہ شیر آهو و شیر مادہ گاؤ و گا و میش تفاوتے ندارد - میگویند که تنگی نفس را فائده میدهد (تزک ص ۷۰ - ۷۱)

4. Indian Python

Python molurus

"I saw a python (in the Vindhyas), 2½ *dira* (same a gaz) long. Its girth was equal to three spans. It had swallowed half a hare and was in the act of swallowing the rest. As the guards were bearing it to me, the hare dropped from its mouth. I ordered them to shove it (the hare) back into its mouth. But, with all their strength they could not open it, till by excessive force, the corners of its mouth were split. Then I ordered them to rip open its belly. Thereupon another entire hare came out. They call this kind of snake as *chital* in Hindustani. It grows so large that it swallows up a hog deer (*Cervus porcinus*) but has no poison and does not bite".

ماری بنظر درآمد که طولش دو نیم درع و حثه او مقدار سه دست



PLATE X

BLACK PARTRIDGE by Muhammad Alam.
Freer Gallery of Art, Washington D.C.

بود و نصف خرگوش را فروبرده و نصف دیگر را در فرو بردن بود - چون قراولان برداشته نزدیک آوردند خرگوش از دهانش افتاد - فرمودم که باز بدهانش در آوردند - هر چند زور کردند نتواستند در آورد - چنانچه از زور بسیار کنج دهانش پاره شد - بعد ازاں فرمودم که شکمش چاک کردند - اتفاقاً خرگوش دیگر درست از شکمش برآمد - ایں قسم مار را در هندوستان چیتل می گویند و بمرتبه کلاں شود که کوته پایه را درست فرو میبرد - لیکن زهرو گزندگی نه دارد (تزک ص ۳۶۹ - ۷۰)

(Aprroximate measurement in feet : length 6$\frac{3}{4}$ and girth 2$\frac{1}{4}$).

The Indian python varies from 6 to 20 feet in length, Smith describes an individual which overcame and devoured a leopard 4 ft. 2 inches in length from nose to rump. *F. B. I,* Rept. and Amph. iii. p. 108 & 109.

5. Diet of king Cobra

Naia hannah

"One day it was reported to me during a hunting expedition that a black snake had swallowed another hooded snake and gone into a hole. I ordered them to dig up the spot and to bring the snake to me. Without exaggeration, I had never till now seen a snake of this size. When they cut open its belly, the hooded snake that it had swallowed came out whole. Although this one was of a different kind, only a little difference was visible in its length and girth".

روزی در شکار بعرض رسید که مار سیاه کفچه مار دیگر را فرو برده بسوراخ درآمد - فرمودم که انجا را کنده مار را برآوردند - بے اغراق ماری باین کلانی تا حال بنظر در نیامده - چوں شکمش

را چک کردند کفچه ماری که فرو برده بود درست برآمد - اگرچه اینقسم دیگر بوده اما در ضخامت و درازی اندک تفاوتی محسوس شد (تزک ص ۳۸۱-۸۲)

(The king cobra has been observed devouring cobras and branded kraits, sometimes of own size. *J. B. Nat. Hist. Soc.* Vol. lxxx, p. 192, c.f., Salim Ali: The Mughal Emperors of India as Naturalists and Sportsmen, *ibid*, Oct., 1927 p. 266)

6. Diet of a fish

"Four hundred fish were netted. Among them was seen a scaleless fish which they call *Sangmahi* (*singhara machhli*). Its belly looked very large and protruded. I ordered them to cut it open in my presence. From its stomach emerged a fish with scales that it had freshly swallowed and had not as yet undergone any change."

چهار صد ماهی بدام افتاد از انجمله یک ماهی بے پولک به نظر در آمد که ان را سنگماهی می گویند - شکمش بغایت برآمده میبود - فرمودم که در حضور چاک کردند - از میانش ماهی پولک داری برآمد که تازه فر و برده بود و هنوز تغیری درونرفته (تزک ص ۲۱۶)

7. Spider that killed a snake

"I saw near Ali Masjid and Gharib Khana (vicinity of Kabul) a large spider of the size of a crab that had siezed by the throat a snake, 1½ *gaz* in length and half strangulated it. I waited a minute to look on. Later it (the snake) died."

در حوالی علی مسجد (نواح کابل) و غریب خانه عنکبوت کلانے را که به جثه برابر خرچنگے بود دیدم که گلوی مار را به درازی

یک و نیم گز خفه کرده او را نیم جانی ساخته است - بجهت
تماشه ساعتی توقف نمودم بعد از لمحه جان داد - (تزک ص ۵۷)

8. Albinos

In a single passage, Jahangir takes note of twelve albino varieties of animals and birds which he calls by the Turkish term *Tuyghan*—whites. Some of these he descirbes selectively so as to distinguish them from others falling in the same group, say, of the level of family and in some cases. genus, All are called by the common names given to the group. These are listed below with relevant notes :

Chikara or Chinkara چکارہ	*Gazelia benetti*	gazelle

called in Persian as Sufidah. **Frequently** observed.

Mush-i Parran موش پران	*Pataurista oral,*	flying squirrel
Yuz-i Sufid یوز سفید	*Felis uncia,*	the ounce or the snow leopard.

Brought by Raja Bir Singhdeo. Had not seen before, Bluish black spots on dirty white coat.

Shahin شاهین	*Falco perigrenoides*	falcon
Basha باشه	genus: *Accipiter*	hawk

Shikra شکرہ	genus: Astur	hawk

Persian word for the bird: *Bigu* (variant *Tafu, Taghu, Tahu*).

Kunjashk کنجشک	*Passer domesticus*	
Zagh زاغ	*Corvus splendens.*	crow.
Kabk کبک	*Casarca*	Sheldrake
Durraj دراج	*Francolinus pondicerianus*	
Podna پودنہ	*Sylvia olivacea*	
Taus طاؤس	*Pavo cristatus*	peafowl

PART II

AVES

PHEASANTS

Francolinus asiae Bonap.

BLACK PARTRIDGE

Kala Titar in Hindi; *Tetra, Kalo Titar* in Garhwali.

The whole of Northern India, Madhya Bharat, Behar, Nepal, Bengal, Chhota Nagpur, Saran, Udaipur, Rajasthan and some parts of the Deccan.

Francolinus asiae Bonaparte, *Comptes Rendes Acd. Sci.*, Paris, xlii (1856) Asia, West Indies, 882; *Francolinus vulgaris* Blanf. & Oates iv, 135.

"I got a black partridge caught by a falcon,and ordered its crop to be cut open in my presence. A mouse was found which it had swallowed whole and had not as yet undergone any change. It was astonishing to see how, its oesophagus, being so narrow, could have admitted a full mouse. Without exaggeration, if somebody else had said so, it was impossible to believe. Since I have personally witnessed it I record it as an unusual thing".

دراج سیاه به باز گیرانیدم فرمودم که در حضور حوصله اش را چاک نمایند - از چینه دان او موش برآمد که درست فرو برده بود و هنوز به تحلیل نرفته حیرت افزای خاطر گشت که نائی گلوی او به این باریکی موش درست را بچه طریق فرو برده - بے افراق اگر دیگری نقل میکرد تصدیق ممکن نبود چون خود دیده شد بنا بر غرابت مرقوم گشت - (تزک ص ۳۷۶)

Francolinus pondicerianus

THE COMMON GREY PARTRIDGE

Teetar in Hindi.

Throughout the Indian Union (except Assam) upto elevations of 1500 ft. West Pakistan and Ceylon with slight variations in colour.

Tetrao pondicerianus Gmelin, *Syst. Nat.* (1789) i, 760, pt. 2 (Pondichery, India). This is only the southern counterpart of *Fr. pond.* treated as subspecies in *F.B.I.* v, 419, under the heading *Fr. Pond. Pond.* Also see Whistler, *Popular Handbook of Indian Birds*, 1935,p. 387.

Francolinus pondicerianus may differ slightly in coloration details, from place to place. Both sexes are alike and are distinguished by the presence of the spurs in the male and their absence in the female.

"One day on the hunting ground, the chief huntsman, Iman Wirdi brought before me a partridge that had a spur on one leg but none in the other. As the way to distinguish the female lies in the spur, by way of testing me, he asked whether it was a male or a female. "A female", I prompty replied. Then they opened its belly. An immature egg appeared therein.Those present inquired incredulously by what sign I found that. I said that the end of the beak in the female is shorter than that of the male. This dexterity came from frequent observation and comparison."

روز ی در شکارگاه امام وردی قر اول باشی دراچ بنظر در آورده که یکپای او خار داشت و پای دیگر خارنداشت چون در ماده مایه امتیاز همیں خارست بطریق امتحان پرسید که ایں نراست یا ماده بداهة گفتم که ماده است - بعد ازاں شکمش را پاره کردند بیضهٔ پیشینه از شکمش برآمد جمعی که در ملازمت حاضر بودند از روی استبعاد پرسیدند که بچه علامت دریافتند گفتم که سر نول ماده نسبت به نر خورد میباشد به تتبع و دیدن آں بسیار ملکه بهم رسید (تزک ص ۳۷۹)

Lophophorus impejanus Lathan

THE IMPEYAN PHEASANT

Lorst, Nil-Mohr, Sona Murgh, Sunall (male) *Ham* (Female) *Jungli Mohr* in Kashmir; *Karati* in Kulu; *Monal, Jhar-monal, Ratia Kawan, Ratnal, Ratkap* in N.W. Himalayas; *Nilgur* in Chamba; *Chadong* in Tibetan Chamba Valley; *Datiya* in Kumaon and Garhwal: *Chamdong* in Bhutan and Sikkim; *Pia Padir* in Mishmi Hills.

From Afghanistan to Mishmi Hills, through Kashmir, Garhwal, Nepal, Sikkim, Bhutan, Chamba Valley and south Tibet.

Phasianus impejanus Latham, *Index. Orn.* ii, 632, 1790 (India); *L. refulgens* Temm., *Pig. et Gull,* ii. (1813), 355; *L. Chambanees* Marshall, *Ibis*, 1884, 421, pt. X (Chamba Kashmir); *L. imp.* var. *mantoni*, Oustalet, *Bull.Soc. Zool.* Paris 1893, 19.

Rogers has literally translated *Murgh-i Zarrin* as a bird of golden colour which is wrong. *Murgh-i Zarrin* is a pheasant

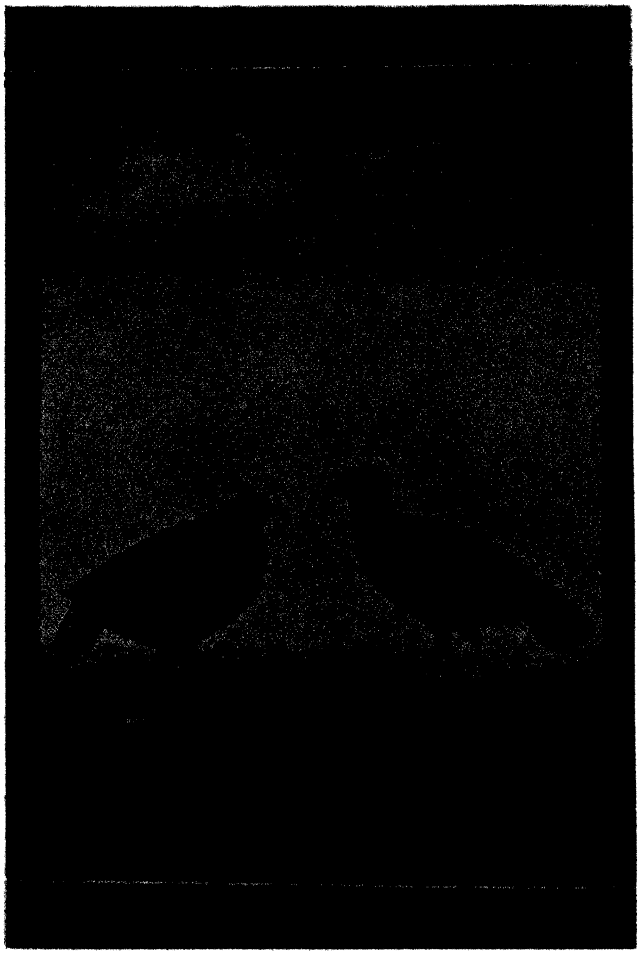


PLATE XI IMPEYAN PHEASANT (male & female) by Mansur
Hermitage, Leningrad, through the courtesy of Institute of Peoples of Asia, Leningrad.

of a predominantly blue and green colour, a yellow tail, a crest and an appearance between the partridge and the common peacock. (See *Farhang-i Nizam* v,iii) '*Zarrin*' is therefore to be taken not in the sense of golden colour but in the idiomatic sense of beautiful, gorgeous.

L. imp. generally inhabits elevations of from 7,000 ft. to 11, 500 ft., dropping down in the winter to the tree level. It may be a casual visitor of Lahore region, but it is doubtful that Jahangir saw it there. The bird was presented to him in Kashmir.

"There is also *Murgh-i Zarrin* which the people of Lahore call *Shan* and the Kashmiris give the name "*Pot*". Its colour is like that of the peacock's breast. Above its head is a tuft. Its tail of the length of five finger-breadth is cinnamon, like the primary quill of the peacock and its body as large as that of a goose. The neck of the goose is long and ungainly of shape; that of this is short and shapely. Brother Shah Abbas (of Persia) had asked for *Murgh-i Zarrin*. Likewise, I sent a few pieces along with his envoy."

دیگر مرغ زرین است که ساکنان لاهور شن گویند و کشمیریان پوط نامند (پوت ؟) رنگش از عالم سینهٔ طاؤس و بالا ی سر کاکل و د مش مقدار چهار پنج انگشت زرد مانند شهپر طاؤس و جثه برابر قاز - غایتاً گردن قاز دراز و بے اندام است و ازین کوتاه و با اندام - برادرم شاه عباس مرغ زرین خواسته بود - چند قطع مصحوب ایلچی او فرستاده شد - (تزک ص ۳۳۹)

BREEDING OF DOMESTICATED PHEASANT

"Of the wild birds the one called pheasant has never been

heard till now to have laid and hatched young ones in captivity. In the time of my revered father they made great efforts to obtain eggs and young ones but it was not managed. I ordered them to keep some of the males and females together. By and by they began to lay eggs. I ordered the eggs to be placed under the domestic hens; and in the space of two years sixty to seventy young ones were hatched. About fifty or sixty grew up. Everybody who heard it expressed his surprise. It was stated that even in Iran men had made great efforts, but had failed to obtain either eggs or chicks".

از مرغ دشتی که او راتدرو میگویند تا حال شنیده نشده که در خانه از و بچه گرفته باشند - در زمان والد بزگوارم نیز سعی بسیار کردند که تخم و بچه بکند نشد - فرمودم که چند ی از نر و ماده او یکجا نگاه داشتند - رفته رفته به تخم آمدند آن تخمها را فرمودم که در زیر ماکیان گذاشتند - در عرض ده سال مقدار شصت و هفتار بچه بر آمد و تا پنجاه و شصت کلان شدند - و هر کس اینمعنی شنید تعجب تمام نموده مذکور ساخت که در ولایت هم مردم سعی بسیار کردند مطلق تخم نه داد و بچه از و حاصل نشد · (تزک ص ۱۰۵ - ۱۰۶)

Gallus bankiva

THE COMMON RED JUNGLE-FOWL

Jungli Murgha, Ban Murgha (male), *Jungli Murghi* (female) in Hindi; *Ban Kukra* or *Kukut* in Bengali; *Ban Kukur* in Assamese; *Natsa pia, Nagseya* in Bhutan; *Paz-ok-chi, Tankling* in Lepcha; *Gang* in Uria; *Lall* in Chamba district.

From Kashmir to East and South Assam in the lower ranges, Chhota Nagpur, Behar, Orissa, Northern and southern parts of Madhya Pradesh; Mandla, Raipur, Bastar, South of Godavary and all those parts of India which are inhabited by the swamp deer (*Cervus duvauceli*). Jungles of Sal tree (*Shorea robusta*) are its commonest haunts.

Gallus ferrugineus Robinson and Kloss, *Rec. Ind., Mus.* (1920) xix, 14, (Behar).

"The Jungle-Fowl can not be distinguished from the domestic fowl. One of its characteristics is, that if it is held in the hand by the legs with the head turned downwards and carried to whatever distance one might like, it emits no sound and keeps silent. On the contrary the domestic fowl makes noise. The feathers of the domestic fowl do not easily return to proper form until it is given a dip in warm water. The wild one belongs to the type of the partridge and the white-throat (sylvia) having dry fiber. It cannot fly beyond the distance of an arrow's reach. The cock is often red, the hens are black or yellow. The jungle of Nurpur has them in abundance".

مرغ جنگلی...در جثه و رنگ و صورت از مرغ خانگی تمیز نه توان کرد و از خصوصیات مرغ مذکور آنست که اگر از پا گرفته سر نگون سازند تا هر جا که برند آواز بر نمی آرد و خاموش میباشد بخلاف مرغ خانگی که فریاد میکند - مرغ خانگی را تا در آب گرم غوطه ندهند پر های آن بسهولت کنده نمی شود جنگلی از عالم دراج و پودنه خشک کنده می شود...زیاده از یک تیر انداز پرواز نمی تواند کرد خروس اکثر سرخ میباشد - ماکیان سیاه و زود و درین جنگل نورپور بسیار است - (تزک ص ۳۴۱)

Tragopan melanocephalus

THE WESTERN HORNED PHEASANT

Jowari in Garhwal; *Jaghi, Jatjhi* in Basahir; *Sing-monal* in N.W. Himalayas; *Jigurana* (male) *Bodal* (Female) in Kulu, Mandi and Suket, *Falgar* in Chamba; *Sonlu* (or *Sotlu*) in Kashmiri (Jahangir).

Lower ranges of the Himalayas from Garhwal to Kashmir and Hazara.

Griffith and Pidgeon in Cuvier's *Animal Kingd., Birds*, iii, Aug. 15, 1829, ex Grey MS., 29. (Almorah); *Phasianus nepaulensis* id., ibid. *Phasianus castaneus*, id., ibid., 28); *Tragopan hastingsii* Vigors, *P.Z.S.*, 1830-31, p.8; Gould, *Century of Birds*, pts. 63, 64, 65, (1831).

"Among the animals observed in these mountains one is *Phul Paikar* (or *Phul Pakar*). The Kashmirians call it *Sonlu*. It is one eight less than a peahen. The back, tail and wings resemble those of the bustard and are blackish with white spots. The abdomen to the lower end of the breast is black with spots, some being red. The quills of the wing are fiery red, very lustrous and beautiful. From the end of the bill to the back of the neck it is brilliantly black. The two horns on top of its head and its ears are of a turquoise colour. The skin of the orbits and about the mouth (*i.e.*, the skin of the cheek) is red. Below its throat there is skin (lappet) of a size enough to fill in the palms of two hands. In the middle of this is a handful of skin, violet of colour with blue spots in the centre. Around it each streak is of a turquoise colour, consisting of eight conical (triangular) projections. Round these blue

streaks it is red to the breadth of two fingers, like peach flower. Again, round its neck is a blue streak. The legs are red. Weighed alive the bird came to 152 *tolahs* and 139 when killed and cleaned".

از جانوری که درین کوهستان (جمو) بنظر در آمد یکے پهول پکار (غالباً پیکر) است کشمیریان سونلو می گویند از طاؤس ماده نیم سوائی خرده تر می میباشد پشت و دم و هر دو بازو بسیاهی مائل از عالم بالهائے چرز و خالهائی سفید می دارد شکم تا پیش سینه سیاه با خالها ی سرخ نیز دارد پر های بازو سرخ آتشیں در نهایت براقی و خوبی و از سر نول تا پس گردن نیز سیاه براق و بالا ی سر دو شاخ و گوشش فیروزه رنگ و بر دور چشم و دهنه پوست سرخ و در زیر حلقوم پوستی گرد مقدار دو کفست و درمیان آن پوست مقدار یکدست بنفشه رنگ است و درمیان آن خالهای فیروزه رنگ افتاده بر دور آن هر خط فیروزه زنگ کشیده مشتمل بر هشت کنگره و بر دور آن خط فیروزه بعرض دو انگشت سرخ گل شفتالو و باز بر گردن آن خط فیروزه رنگ و پایهایش نیز سرخ رنگ زنده را که وزن فرموده شد یکصد و پنجاه و دو توله بر آمد بعد از کشتن و پاک ساختن یک صد و سی و نه توله شد -

سرسید صفحه ۳۳۸ - ۳۳۹

Tetraogallus himalayensis

THE HIMALAYAN SNOW-COCK

Jer-Monal, in the hills of north of Mussourie; *Huinwai* in Kumaon; *Leep* in Kulu, *Kabuk*, *Gaurkaga* in Kashmir; *Kabk-i*

dari in Persian (Afghanistan); *Utar, Ular* in Turkistan; *Galaund* in Chamba; *Kulla, Lupa, Baera* in western Nepal.

Western Himalayas from Tianschen, the Pamirs and Eastern Afghanistan to Kashmir, Ladakh and Garhwal.

P.Z.S. 1842, 105, Jan. 1843 (Himalayas)

The suggestion in the passage quoted below is that the bird called here as *Jan Bahan* (or *Yan Bahan*) belongs to the Family Phasianidae. But the name *Jan Bahan* is not found in the native names of the species occurring in this Family. The present identity is the nearest. It is based only on the facts stated by Jahangir pertaining to its affinity, habitation food and colour.

It is difficult to agree with Dr. Salim Ali, who on the basis of a painting by Mansur, has identified the bird described here, as the cheer pheasant, *Catreus wallichi* (J.N. Hist. Soc., XXXIII, No. 1, August 1927, p. 53, photograph facing p. 52).

The painting does not seem to have any relevance with the description. There is no evidence of Jahangir having ordered it. Probably Mansur painted the bird independently. Moreover, Jahangir states that the bird called *Jan-Bahan* is an inhabitant of snow-covered mountains, whereas the cheer pheasant can hardly be found to go even as high as the forest limits.

Jammu is not however the habitation of this snow-cock But the bird is the most widely distributed of all its allied species and the only one to be found in strictly Indian limits. It can possibly be found as low as the hills of Jammu in heavy winter season. From the statement of Basu (mentioned below) it appears that *Jan Bahan* is also a casual visitor of the Jammu hills.

"I happened to see a bird which the people of this mountain (Jammu) call *Jan Bahan*. It resembles the *Qarqawal* which is also known as *Tadarv*. Its colour is exactly like that of the female *Qarqawal* (hen-pheasant) but has the size of the white *Qarqawal*. The said Basu stated that this bird lived in the snow mountains and its food was grass and herbage."

جانوری بنظر در آمد که مردم کوهستان (جمو) آن را جان بهن خوانند مانند قرقاول است که تدرو نیز گویند رنگش بعینه برنگ ماده قرقاول است لیکن در جثه قرقاول سفید - باسوی مذکور معروض داشت که آن جانور بر کوه برف میباشد و خوراکش علف و سبزه است - (تزک ص ۳۳۸)

Theleagris gallapova

THE DOMESTIC TURKEY

Foreign bird, imported from Goa where it seems to have been introduced by the Portugese from whom Muqarrab Khan bought it and presented to Jahangir. Jahangir says that the bird was never seen before, nor anybody knew its name.

Several species of this bird are noted. The specific identification is made here on the basis of the description given in the passage below and in the light of a photograph of the original painting ordered by Jahangir. Reference are extant in modern works.

"One of these animals (Muqarrab Khan bought from Goa) is one, larger than a peahen and smaller than the peacock. When

it is in heat it spreads out its feathers like the peacock and dances about. Its beak and legs are like those of a cock. Its head, beak and parts under the throat (lappet) change to a different colour after every little while; quite red when in heat—one might say it had adorned itself with red coral—now white like cotton, now of a turquoise colour. Like a chameleon it constantly changes its colour. On the head it has two pieces of flesh that look like the comb of a cock. A strange thing is this: when it is in heat, the aforesaid piece of flesh hangs down to the length of a span from the top of its head like an elephant's trunk; when again it raised it up it appears on its head like the horn of a rhino to the extent of two finger-breadth. Round the eye it is always of turquoise colour, and does not change. Its feathers appear to be of various different colours, differing from the colours of the peacock."

یکے از جانوران در جثه از طاؤس ماده کلان تر و از نر فی الجمله خورد تر گاهی که در مستی جلوه می نماید دم خود را و دیگر پر ها را طاؤس آسا پریشان می سازد و برقص در می آید نول و پا ی او شبیه نول و پا ی خروس است سر و گردن و زیر حلقوم او هر ساعت برنگے ظاهر میگردد وقتی که در مستی است سرخ سر خشت گویا که تمام را بمرجان مرصع ساخته اند و بعد از زمانی همین جاها سفید میشود و بطریق پنبه بنظر در می آید و گاهی فیروزه رنگ ظاهر می گردد بوقلمون آسا هر زمان برنگے دیگر دیده می شود و دو پارچه گوشتی که بر سر خود دارد بتاج خروس مشابه است - غریب اینست که در هنگام مستی پارچه گوشت مذکور بطریق خرطوم از بالای سر او تایک وجب می آویزد و باز که آن را بالا میکشد چون شاخ کرگدن بر سر او مقدار دو انگشت نمایان میگردد و اطراف چشم او همیشه فیروزه گون است و دران تغیر و تبدل نمی رود و پرهای او بالوان مختلف بنظر در می آید برخلاف رنگهای پر طاؤس -
(تزک ص ۱۰۵)

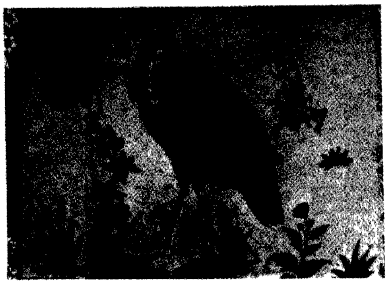






PLATE XII TURKEY COCK with TRAGOPAN (top) and DUCK (bottom), all by Mansur. *Hermitage, Leningrad, through the courtesy Institute of Peoples of Asia, Leningrad.*

CRANE

Anthropoides virgo Linn

THE DEMOISELLE CRANE

Karkarra, *Kulang* in Hindi; *Kallam* in the Deccan, *Wada-karaka* in Telugu, *har-koncha* in Kanarese, *Garara*, in Uria; *Markuchi* in Mahratti; *Ghanto* in Nepalese.

Throughout India except south of Coimbatore, Eastern part of Behar and according to Jahangir, Kashmir. See Append. Birds not found in India.

Ardea virgo Linn, *Syst. Nat.*, 10th ed. i, 144.

"Its (the kulang's) oesophagus passes in a serpentine manner between the bones of the breast to the rump and then turns back from there and joins the throat."

حلق او (کلنگ) بطریق مارپیچ از میان استخوان سینه گذشته
تا دم غازه رفته و از آنجا باز برگشته بگلو پیوسته است
(تزک ص ۳۷۹)

Houbaropsis bengalensis Gmelin

FLORICAN

Charas, *charg*, *charat* in Hindi, *Dahar* (male), *Bor* (Female) in Tarai; *Ulu-mora* in Assamese.

Assam, East Bengal, Behar, Oudh, extending as far as Kumaon; Terai, where the climate is suitable; rarely in Cachar and Sylhet; also found in Comilla and Chittagong.

Otis bengalensis Gmelin, *Syst. Nat.* i, (2), 724, (Bengal): *Otis himalayensis*, Vigors, *P.Z.S.* 1830-31, Feb. 1, 1831, 23 (Himalayas); *Otis deliciosa* Gray, in Hardwick's *Illustr. Ind. Zool.* i, Dec. 2, 1831,pt. 61 (India).

"It is a strange thing that the oesophagus in all animals, which the Turks call *halq* is single from the top of the throat to the crop, while in the case of bustard it is different. In the bustard it is single for a length of four finger-breadth from the throat and there it divides into two branches and in this form, reaches the crop."

"The *charz* is of two kinds; one is mottled black and the other buff. I now discovered that they are not two kinds, but that which is mottled black is the male, and that which is buff is the female. The proof of it is this: the mottled one had testicles, the buff one had eggs (inside it). This has been repeatedly verified."

از غرایب آنکه نای گلوی جمیع حیوانات که ترکان آنرا حلق گویند از سر گردن تا چینه دان یکی میباشد و از چرز خلاف همه از سر گلو تا چهار انگشت یک حلق است - باز دو شاخ شده بچینه دان پیوسته و از جائیکه دو شاخ میشود سر بند است گره طوری بدست محسوس میگردد -

چرز دو قسم می باشد یکی سیاه ابلق دویم بور و درین ایام معلوم شد که دو قسم نیست - آنچه سیاه ابلق است نراست و هر چه بور است ماده و دلیل برین آنکه از ابلق خصیه ظاهر شد از بور بیضه و مکرر امتحان نموده شد (تزک ص ۳۷۹)



PLATE XIII GUINEAFOWL by Mansur

Hermitage, Leningrad,
The Institute of Peoples of Asia, Leningrad.

Antigone antigone Linn

SARUS

Saras, Sirhans in Hindi, *Khur-sang* in Assamese.

Throughout Northern India, parts of the Deccan from Bombay to Khandesh and Godavary river, Upper Bengal, the Punjab, Rajputana (eastern part), Assam to Burma, Parts of Central India.

Ardea antigone Linn., *Syst.Nat.*, 10th edition, i, Jan. 1758, 142, (India Hartet); *Grus collaris* Boddaert, *Tabl. Planch. Enlum.* 1783, 52; *Grus Orientalis* Franklin, *P.Z.S.* 1830-31, 123.

"At this place (Deogaon) between Ajmer and Surat, I observed a strange incident. Before we had arrived at this halt an eunuch had caught two young saruses, a kind of crane. At night when we arrived at the said place, two large saruses appeared, making loud cries near the parlour which they had placed on the bank of the pond, as if somebody had been cruel to them. They fearlessly began their lamentations and came forward. It occurred to me that some kind of wrong had been done to them, and probably their young ones had been taken away from them. After enquiry was made the eunuch who had taken the young Saruses brought them before me. When the saruses heard the cry of their young ones, impatiently they hurled themselves upon them; and suspecting that they had eaten nothing, each one of them held out food to their mouths and consoled them in all sorts of ways. Then, taking the two young ones between them and fondling them they walked off to their nest with their wings spread out."

درین منزل (دیو گانؤن میان اجمیر و گجرات) امر عجیب

مشاهده گشت پیش ازاں که رایات عالیات بدین منزل و مقام رسد خواجه سرای بکنار تال عظیمی که درین موضع واقعست میرسد و دو بچه سارس را که از عالم کلنگ جانوریست میگیرد و شب که بمنزل مذکور نزول افتاد دو سارس کلان فریاد کنان بحوالئی غسلخانه که برلب همین تال زده بودند ظاهر شدند چنانچه کسے تظلمی داشته باشد بے وحشت و دهشت آغاز فریاد کرده پیش آمدند بخاطر رسید که البته بانیهاستمی رسیده است بیشتر آنست که بچه اینها را گرفته باشند بعد از تفحص خواجه سرائے که بچهای سارس را گرفته بود آورده بنظر گزرانید - چون سارسها فریاد و آواز این بچهارا شنیدند بیتابانه خود را بسر آنها انداختند و بگمان آنکه شاید طعمه بایشها نرسیده باشد هر یک ازین دو سارس طعمهٔ در دهن آن بچها می نهادند و انواع غمخواری میکردند و آن دو بچه را درمیان گرفته بال افشانان و شوق کنان باشیانهٔ خود متوجه گشتند - (تزک ص ۱۶۹-۷۰)

PAIRING OF SARUS

"At this time the act of pairing of sarus which I had never seen before and is reported never to have been seen by men, was witnessed (by me). Sarus is an animal of the kind of the crane, but is larger by ten or twelve feathers. It has its skin drawn over the bones of the head. Between the back of the eye and the neck it is red to the extent of six finger-breadths. Mostly they live in pairs on the plains and are occasionally seen in flocks. People (sometimes) get a pair from the fields and keep them in their houses and they develop a liking for men. To cut short, there is a pair of sarus in my establishment. I have given them the names of *Laila* and *Majnu*. One day an eunuch informed me that they

had paired in his presence. I ordered him to inform me when they showed the inclination to pair next. At dawn he came and told me that they were about to pair again. I immediately hastened to watch. The female having straightened her legs leaned down a little; then the male lifted up one of its claws from the ground placed it on her back, then placed the other and settled himself on her back for a while and paired with her. Then he came down, and stretching out his neck, reached out the bill to the ground and for once walked round the female. It is possible she may lay eggs and they hatch young ones."

دربغولا جفت شدن سارس که تاحال دیده نشده بود و در مردم شهرت دارد که هرگز هیچکس ندیده بنظر در آمد - سارس جانوریست از عالم کلنگ غایتاً از کلنگ از ده دوازده پر کلان تر و میان سر پر ندارد و پوستی است بر استخوان سرکشیده و از پشت چشم تا مقدار شش انگشت از گردن او سرخ میباشد اکثر در صحرا جفت جفت بسر می برد و احیاناً خیل خیل هم به نظر در می آید و جفت آنرا از صحرا آورده در خانها نگاه می دارند و با مردم انس میگیرند القصه جفت سارس است در سرکار من که لیلی و مجنوں نام نهاده ام - روزے یکے از خواجه سرایان عرض کرد که در حضور من اینها باهم جفت شدند حکم فرمودم که هرگاه باز اراده جفت شدن داشته باشند مرا آگاه سازند هنگام سفیده صبح آمد عرض کرد که باز میخواهند که جفت شوند در لحظه خود بجهت تماشه شتافتم - ماده پاهائے خود را راست گذاشته اندک خم کرد نر اول یک پائے خود را از زمین برداشته بر پشت او نهاد و بعد ازان پائے دوم را و لحظهٔ بر پشت او نشسته جفت شد آنگاه فرود آمد و گردن را دراز ساخته نول را بر زمین رسانید یک مرتبه بر گرد ماده گشت یمکن که بیضه نهاده بچه هم بر آرند (تزک ص ۲۳۳ - ۳۴)

LAYING AND HATCHING OF EGGS

"On Sunday the 21st (*Amrdad*, August 12, 13th regnal year) the sarus about whose pairing I have written above collected together some straw and grass in the little garden and laid first of all one egg. This pair of saruses was caught when they were a month old, and had been in my establishment for five years. After five and a half years they paired, and continued doing so for a month. On the twenty first of *Amrdad* which the Hindus call *Sawan* (*srawan*) the hen laid the eggs. The female used to sit on the eggs the whole night, alone, and the male stood near her on guard. He was so wary that nobody would dare pass near her. Once a large weasel made its appearance, and he ran at it with all impetuosity, and did not spare it until the weasel got into a hole. When the sun illuminated the world with his rays, the male went to the female and pecked her back with his beak. The female then rose, and the male sat in her place. In the same manner the female came, made him rise, and seated herself. In short the female sits the whole night and takes care of the eggs and by day the male and female sit by turns. When they rise and sit down they take great precaution that no harm shall come to the eggs."

روز دوشنبه بست و یکم سارس که جفت شدن آنرا در اوراق
سابقه نبت کرده‌ام در باغچه خس و خاشاک فراهم آورده اول
یک بیضه نهاده روز سویم بیضه دوم نهاده این جفت سارس را
در یک ماهگی گرفته شده بود و پنج سال در سرکار مانده القصه
بعد ازین پنج و نیم سال جفت شدند و تا یکماه جفت میشدند
در بیست و یکم ماه امرداد که باصطلاح اهل هند ماه ساون
گویند بیضه نهادند ماده تمام شب تنها بر بیضه می نشیند و نر
نزدیک ماده ایستاده پاس میدارد و چنان آگاه می باشد که
هیچ جانداری را مجال آن نیست که نزدیک باو توان گذشت
یک مرتبه راسو کلانی نمودار شد بشدت هر چه تمام تر بجانب



PLATE XIV

CHEER PHEASANT by Mansur
Victoria & Albert Museum, London.

او دویده تاراسو خود را بسوراخ نرسانید دست ازو باز نداشت چون نیر اعظم جهان را بنور خویش نورانی ساخت نر برابر ماده آمد بمنقار پشت اورامی خارد و بعد ازان ماده بر می خیزد و نر مینشیند و باز ماده نیز به همین دستور آمده اورا بر می خیزاند و خود مینشیند و در وقت نشستن و برخاستن نهایت احتیاط بجا می آرند که مبادا آسیبی به بیضه رسد -
(تزک ص ۲۳۷)

"Friday was the first day of the month of *Shahrivar* (August 22). From Sunday the 3rd upto the night of Thursday, (*Mubarak-Shambah*) it rained. It is strange that while on other days the pair of sarus sat on eggs five or six times by turns, during these days and nights when there was constant rain and the air was somewhat cold, the male, in order to keep the eggs warm, sat without break from early in the morning until midday, and from that time until the next morning the female sat continuously, for fear that in rising and sitting again the cold air should affect them and the eggs become wet and be spoilt. Briefly, men are led by the guidance of reason and animals according to the Divine wisdom implanted in them by Nature. Stranger still that at first they kept their eggs close by each other underneath the breast, and after fourteen or fifteen days they made little gaps among them, lest their temperature should rise too high from contact and they get addled due to excessive heat."

روز جمعه غرهٔ شهریور ماه شد از روز یکشنبه سویم تا شب مبارک شنبه باران بارید غرایب آنکه روزها ی دیگر جفت سارس پنج شش مرتبه بنوبت بالاے بیضه می نشیند درین شبانروز که پیوسته باران بود و هوا بقدر برودت داشت بجهت گرم داشتن بیضه ها از اول صباح تا نصف النهار متصل نر نشست و ازین روز تا صباح روز دیگر بے فاصله ماده نشست که مبادا از برخاستن

و نشستن بسیار برودت هوا تاثیر کند و نم به بیضها رسد و ضائع شوند مجملاً آنکه آدمی به رهنمونی عقل ادراک می کند و حیوان بمقتضای حکمت ازلی مجهول بان شده و غریب تر آنکه در اوایل بیضه ها را متصل بهم در زیر سینه نگاه میداشت بعد ازان که چهارده پانزده روز گذشت درمیان بیضه ها بقدر فاصله گذاشت که مبادا از اتصال آنها حرارت بافراط شود و از گرمی بسیار فاسد گردند - (تزک ص ۲۳۸)

FEEDING THE YOUNG ONES

"On the eve of Thursday (*Mubarak Shambah*), the 21st, the sarus hatched one chick, and on the eve of Monday the 25th, a second; that is, one was hatched after thirty four days, and the other after thirty six days. One might say that a young one was ten or eleven times larger than the young of a goose, or equal to the young of a peafowl at the age of a month. Its skin was of blue colour. On the first day it ate nothing, and from the second day the mother, taking small insects in her mouth, sometimes fed it like a pigeon or sometimes like a hen threw them before it to pick of itself. If the insect was small she would throw it whole, but if it were large, she made two or sometimes three pieces of it, so that the young one might eat it with ease. As I was very fond of seeing them I ordered them to be brought before me with the utmost care so that no harm might happen to them. After seeing, I ordered them to be taken back and to be carefully looked after."

شب مبارک شنبه بیست و یکم سارس یک بچه برآورد و شب دوشنبه بیست و پنجم بچه دوم مجملاً یک بچه بعد از سی و

چهار روز و دوم بعد از سی و شش روز برآمد در جثه از بچه قاز ده یازده کلان تر یا برابر بچه طاؤس یکماهه توان گفت پشمش نیله رنگ است - روز اول هیچ نخورد و از روز دوم مادرش ملخهای خورد را بمنقار گرفته گاه مثل کبوتر می خورانید و گاه بروش مرغ پیش بچه می انداخت که خود بچینند اگر ملخ ریزه بود درست می گذاشت و اگر کلان تر بعضی را دو پاره و بعضی را سه پاره میکرد تا بفراغت بچه ها ی او توانند خورد چون بسیار میل دیدن آنها داشتم حکم فرمودم که با احتیاط تمام چنانچه آزاری و آسیبی بانها نرسد بحضور بیارند و بعد از دیدن باز فرمودم که بهمان باغچه درون دولتخانه برده به محافظت تمام نگاه دارند (تزک ص ۲۴۲)

THE MALE FONDLES THE CHICK

"In the beginning the male sarus used to hold its young one by its leg upside down in his beak and there was fear that he might be unkind to it and it might be destroyed. Accordingly I ordered the men to keep him separately and not to allow him near the young ones. Now, in order to test I ordered him to be brought near the chicks, so that the truth about his unkindness or love may be ascertained. After allowing him he displayed much attachment and affection and his love was found to be no less than that of the female. I thus knew that his previous behaviour too was out of affection."

در اوائل سارس نر پاے بچه خود را بمنقار گرفته سر نگون آویزان میساخت و بیم آن میشد که مبادا از اثر بے مهری باشد وضائع سازد بنابران حکم فرموده بودم که نر را جدا نگاه دارند و

پیش بچه ها نگذارند - درین ولا بجهت امتحان فرمودم که نزدیک بچه ها بگذارند تا حقیقت بےمهری و محبت ظاهر گردد و بعد از گذاشتن نهایت تعلق و مهر دریافته شد و محبت او هیچ کمتر از محبت ماده نیست - و معلوم می شود که آن اداهم از روی دوستی بوده - (تزک ص ۲۴۵)

A FIGHT WITH A PAIR OF WILD SARUS

"On this day a strange incident was observed. The pair of saruses that had hatched young ones had been brought from Ahmadabad on Thursday. In the courtyard of the royal enclosure, which had been placed on the bank of a tank, they were walking about with their young ones. By chance both the male and the female raised a cry, and a pair of wild saruses, hearing it, cried out from the other side of the tank and came flying on their wings towards them. The male with the male and the female with the female engaged in a fight. Although some poeple were standing about, the birds paid no heed to them. The eunuchs appointed to look after them (*Laila and Majnu*) ran to hold them up. One of them (the eunuchs) caught hold of the male and the other of the female. The male was disengaged with great difficulty. But the eunuch who had laid his hand on the female could not disengage it and she slipped from the hand. Throwing a loop round the beak and the legs I freed it myself and they both went back to their own place."

درین روز غریب تماشائے مشاهده شد جفت سارس که بچه کشیده بود روز مبارک شنبه از احمدآباد آورده بودند در صحن دولت خانه که بر کنار تال ترتیب یافته بود با بچه های خود میگشتند

اتفاق نر و ماده هر دو آواز کردند و جفت سارس صحرائی آواز اینها شنیده ازان طرف نالی فریاد برآوردند و بر اثران پرواز کنان آمده نر با نر و ماده با ماده بجنگ افتادند و بانکه چند کس ایستاده بودند اصلا ملا حظه مردم نکردند و خواجه سرا یانی که بمحافظت آنها مقررند بقصد گرفتن شتافته یکے به نر در آویخت و دیگری بماده آنکه نر را گرفته بود بتلا ش بسیار نگاهداشت و آنکه بماده دست انداخته نتوانست نگاه داشت و از چنگ او بدر رفت من بدست خود حلقه در بیضی و پاهائے او انداخته آزاد ساختم و هر دو بجا و مقام خویش رفته قرار گرفتند (تزک ص ۲۴۷)

SARUS, A GREAT LOVER

"Many strange tales of the affection of the sarus for its mate have been heard. Since these tales have been repeatedly endorsed and are unique these are recorded here. One of them is this : Qayam Khan who is a servant, born of the royal household and an expert in hunting and game-keeping stated before me, 'one day I had been out for the chase. I sighted a sarus sitting. When I approached nearer, it rose from its place and walked away. Weakness and woe was apparent from his gait. I advanced to the place where it had been sitting and found there a few bones and a handful of feathers which he had collected under him and sat over them. Spreading a net around this spot I withdrew myself aside. As it wanted to come back and sit in its place, it had the leg trapped in the net. I moved up and caught it. It seemed very light. When I saw carefully I found that not a single feather had been left on its breast and abdomen and the skin too had

shed off, nay, no part of its body showed any remains of flesh. What I gained was a handful of feathers and a few bones. It was apparent that the mate of the sarus was dead and it had sat there to this day in grief for its separation.'

"Himmat Khan, who is a good servant of mine and his words are reliable, related, 'in the parganah of Dohad a pair of sarus was seen. One of my gunners killed one of them and cutting off its head there and then cleaned it off. However, we chanced to stay at that place for a couple of days more. Its mate kept on roaming around the spot all the time and made much lamentations. I was pained to see its restiveness but save for being sorry there was no way out. After we had left, it happened that we passed from that place twenty five days later. From those that dwelt around that place I enquired as to whatever passed on that sarus and asked about its plight and the finale of the episode. They said that it died the very day and the remains of its bones and feathers were still there. I personally went there and saw; as they had said was found.'

"A number of stories of this kind are current among the people, but it would take long to write them here."

و از الفت و محبت سارس با جفت خود نقلهای غریب و عجیب بسیار شنیده شد - چون بتواتر رسیده و غرابت تمام دارد نوشته می شود از جمله قیام خان که از خانه زادان این درگاه است و در فن شکار و قراولی وقوف تمام داود عرض کرد که روزے بشکار رفته بودم سارسے نشسته یافتم چون نزدیک تر شتافتم از جاے خود برخاسته روان شد و از رفتار او ضعفی والمی یافته شد جاے که نشسته بود رفتم استخوانے با مشتی پر بنظر در آمد که در زیر خود گرفته نشسته بود بر دوران دام چیده خود را بگوشه کشیدم خواست که بجاے خود آمده بنشیند پایش بدام مضبوط شد

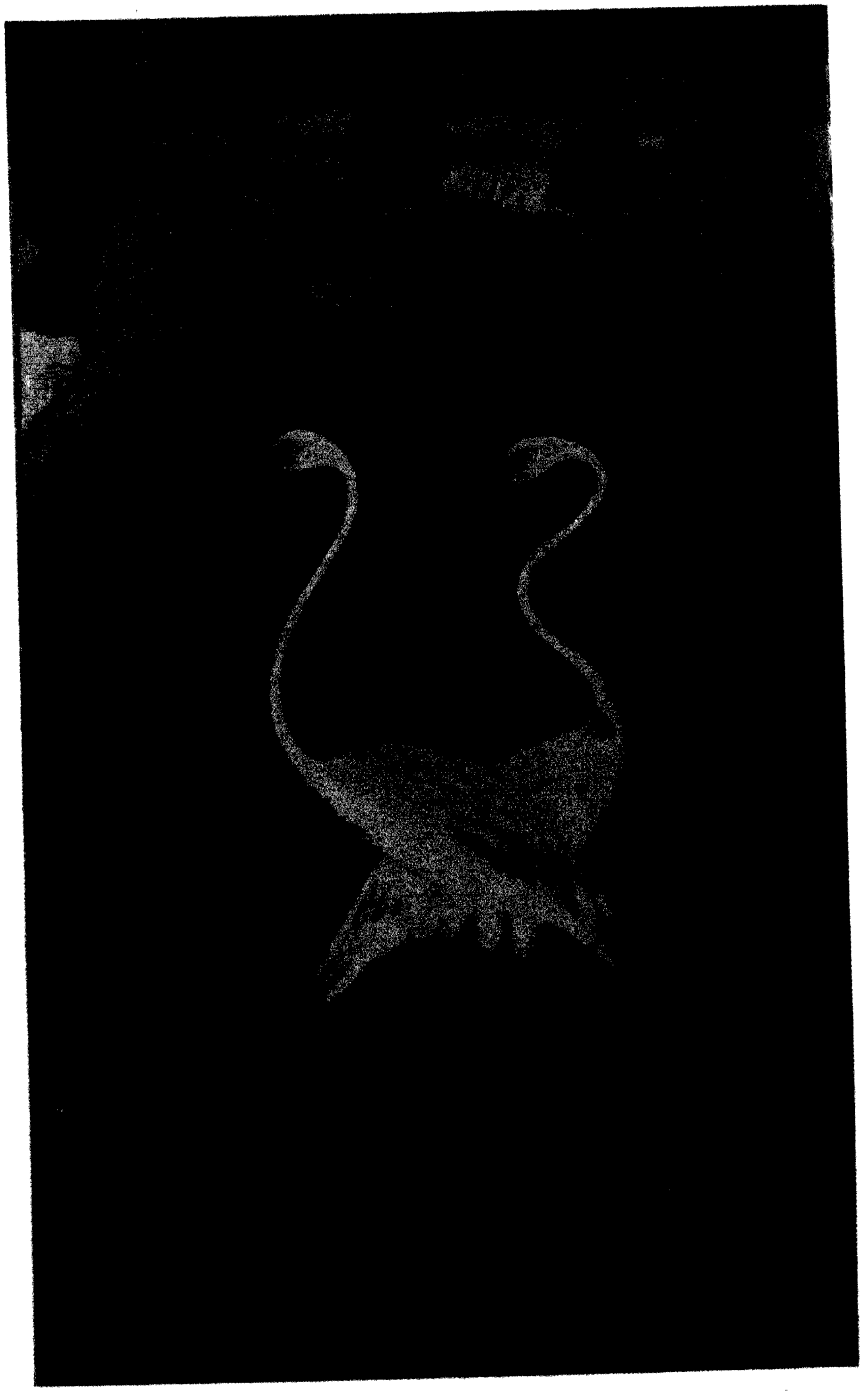


PLATE XV

FLAMINGOES. School of Jahangir.

Ready Money House : Collection of Late Sir Cowasji Jahangir.

پیش رفته گرفتم بغایت سبک بنظر در آمد چون نیک دیدم در سینه و شکم اصلا پر نمانده گوشت و پوست از هم ریخته و کرم افتاده بلکه در تمام اعضا اثری از گوشت نمانده مشت پرے با استخوانے چند بدست در آمد ظاهر شد که جفتش مرده و از فراق او باین روز نشسته -

همت خان که از بند ها ی خوب من است و سخن او اعتماد را میشاید عرض کرد که در پرگنه دوحد جفت سارس بوکنار تال بنظر در آمد از بندوقچیان من یکے را زد و همان جاسرش بریده پاک ساخت قضا را درین منزل دو سه روز مقام واقع شد جفت او پیوسته دران گرد و پیش میگشت و فریاد و فغان می کرد و مرا از بیقراری او دل بدرد می آمد و غیر از ندامت چاره نبود - چون ازان منزل کوچ شد بحسب اتفاق بعد از بیست و پنجروز به همان روز جان داد و هنوز اثری از استخوان و پر و بال او برجاست من خود بانجا رفته دیدم بنوعی که گفته بودند و نشان داده بودند نشان یافتم - ازین عالم نقلها درمیان مردم بسیار است نوشتن آنها طولی دارد - (تزک ص ۲۳۳ - ۳۴)

DIPPER

Ciaclus cinclus

Daodui-di in Cachari.

Kashmir, Murree hills, Garwal, Nepal, Sikkim, Tibet, North Assam as far East as Tezpur, West to the Khagan Valley and the whole N.E. Frontier.

Cinclus cashmiriensis Gould, *P.Z.S.*, 1859, 494 (Kashmir)

"Saw a bird (in Kashmir) from the order of the *Saj*. The *Saj* is black and has white spots, while this bird resembles with the *Bulbul* (nightingale) in colour, and has white spots. It dives into the water, remains underneath the water for a long time and emerges from a different place. I ordered two or three to be caught so that I might ascertain whether it was a water fowl and was web-footed or had open claws like the birds of the jungle... Its feet were not webbed like a duck's. I ordered Nadirul-Asar Ustad Mansur, to draw its likeness. The Kashmirians call it *Gulkar* that is, Water Saj."

جانوری بنظر در آمد از عالم ساج - ساج سیاه رنگ است و
خالهائی سفید دارد و این همرنگ بلبل است با خالهاے سفید
و غوطه در آب میخورد و زمان ممتد در زیر آب میباشد و از جا ی
دیگر سر بر می آرد فرمودم که دو سه جانوران گرفته آرند تا معلوم

شودکه از بابت مرغابی است پوست درمیان پادارد و باهم پیوسته یا از عالم جانوران صحرائی کشاده است پنجه اش مثل مرغابی پیوسته نبود بنادرالعصر ی استاد منصور نقاش فرمودم که شبیه آن را بکشند - کشمیریان گلکر می نامند یعنی ساج آبی -
(تزک ص ۳۰۵ - ۳۰۶)

HAWK-CUCKOO

Hierococcyx varius

Papiha, Upak, Kapak in Hindi; *Zakhat* in the Decan; *Chok-gallo* in Bengali; *Irolan* in Malayalam; *Bim-pi-yal* in Lepcha; *Kutli-pitta* in Telugu.

The whole of India except Sindh and the Punjab; Ceylon.

Cuculus varius Vahl, *Selsk, kjobenhavn,* iv, 1797, 61; (Tranquebar S. India); *Cuculus tenuirostris* Lesson *Traite d' Orn.*, 1830, 146 (Bengal); *Cuculus lathami* Grey, Hardwick's *Illus. Ind. Zool.*, ii, Oct. 5, 1832 pt. 34, fig. 2 (India); *Cuculus ejulans Sundevall. Phys. Sellsk. Tidskr.*, i (2) 1837, 164; *Hierococcyx nisiodes* Blyth, *Ibis*, Oct. 1866, 362 (Nepal).

"There is a bird in India called *Papiha*, pleasing of voice. In rainy season it emits heart-softening cries. Just as the *Koel* (*Eudynamis scolopaceus*) leaves its eggs in the nest of the crow and the crow hatches its eggs and brings up its young ones, similarly, I saw in Kashmir that the *Papiha* leaves its eggs in the nest of the dove which hatches and brings up its young ones."

در هندوستان پیپیها نام جانوری است خوش آواز که در موسم برسات نالهٔ های جانسوز میکشد چنانچه کویل بیضهٔ خود را در آشیان زاغ می نهد و زاغ بچهٔ او را میکشد و می پروراند در کشمیر دیده شد که بیضهٔ خود را در آشیان غوغائی نهاده بود و غوغائی بچهٔ آن را پرورش میداد - (تزک ص ۳۰۹)



PLATE XVI

DIPPER by Mansur

The Metropolitan Museum of Art, New York, purchase, 1955. Funds given by The Kevorkian Foundation supplementing the Rogers Fund.

KOEL

Eudynamis scolopaceus Linn.

Eud. honorata Blanf. and Oates

Koel in Hindi; *Kokil* in Bengali; *Kokila* (male) *Podak* (Female) in Telugu.

All over India; rare in Sindh and the Punjab; Ceylon. According to Jahangir *koel* is not found in Kashmir.

Cuculus scolopaceus Linn., *Syst. Nat.*, 10th edition, i, Jan. 1758, 111, (Bengal); *C. Niger id., ibid.*, Jan. 1758, 111. (Bengal); *C. honoratus id., ibid.*, 12th ed., i, 1768, 169, (*Malabaria*); *C. indicus* Latham, *Index Orn.*, i, 1790, 211 (India); *Eud. Ceylonensis* Cabanis and Heine, *Mus. Heien*, ix, 1864, 51, (Ceylon).

"The koel is a bird of crow tribe, but smaller. The crow's eyes are black, and those of the koel red. The female has white spots; but the male is all black. The male has a very pleasant voice, in fact the voice of the female is no match to his. The koel is really the nightingale of India. Just as the nightingale grows vociferous and excited in the spring, the clamours of the koel coincide with the advent of the rainy season. Its cry is exceedingly pleasant and penetrating, its frenzied excitement a prologue to the arrival of the mango season. For most of the time it stays on the mango tree enamoured of the colour and smell of mangoes. Of all, the strange thing is that it does not hatch its own eggs; but when it is to lay an egg, wherever it finds a nest of

a crow unguarded, it breaks the crow's egg with the beak, throws it away and laying its own in the place, flies off. The crow, mistaking this egg as its own, hatches it and brings up the young one. I have myself observed this strange phenomenon in Allahabad."

کویل مرغی است از عالم زاغ غایتاً در جثه خورد تر هر دو چشم زاغ سیاه می باشد و از کویل سرخ ماده او خالهای سفید می دارد و نر سیاه یکرنگ است نر او بغایت خوش آواز می باشد بلکه آواز او را هیچ نسبتی باواز ماده نیست - کویل در حقیقت بلبل هندی است همچنان که مستی و شورش بلبل در بهار میباشد آشوب کویل در آمد برسات که بهار هندوستان است می شود - ناله اش بغایت دلنشین و موثر است و آغاز مستی او مقارن است برسیدن انبه اکثر بر درخت انبه می نشیند او از رنگ و بوی انبه محظوظ است و از غرایب آنکه کوئل خود بچه از بیضه بر نمی آرد و در وقت بیضه نهادن هر جا آشیانهٔ زاغ را خالی می یابد بیضه آنرا بمنقار شکسته بیرون می اندازد و خود بجائے آن بیضه می نهد و می پرد زاغ آن را بیضه خود تصور کرده بچه بر می آرد و پرورش می دهد و این امر غرایب را من خود در اله آباد مشاهده کرده ام -

(تزک ص ۲۲۶)

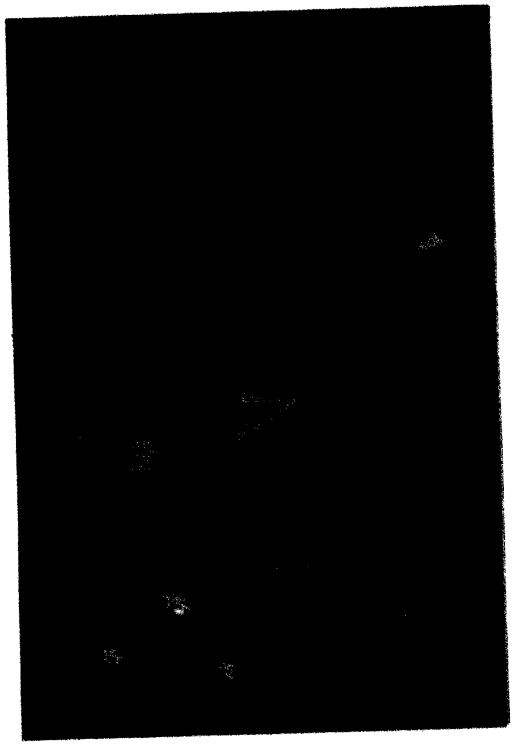


PLATE XVII A A BIRD by MANSUR
National Museum, New Delhi.

LORIQUET

Coryllis vernalis

At least two species of the Malaysian loriquet are noted. *Loriculus galgulus*, very small in size, general colour green, bill black, common in the country except Java and Bali. *Loriculus vernalis* has a red bill. Two subspecies of the latter are found in India. *Coryllis vernalis* (*Loriculus vernalis* of Blanford and Oates and *Psittacus vernalis* of Sparrman) is common in the Himalayas from Sikkim to Assam, Tippera, Comilla and Chittagong in Eastern Bengal. The other, *Coryllis vernalis rubropygialis* is found on the Malabar coast from Cape Comorin to Bombay city, Nilgiri and adjoining hills.

From the very curious habit of *C. vernalis* that it sleeps hanging upside down by the claws clutched at a bough it is called in Hindi as *Latkan*.

For references to literature See F. B. I. second ed. vol. IV, 1927, pp. 217 and 218 and vol. VII, 1930, p. 343; Literature on Malaysian birds is scarce. A short notice is found in *Birds of Malaysia* by Jean Delacour, New York, 1947, p. 12.

"Recently a bird was brought from the lands of Zirbad (Sumatra and Java). The dominant colour of its body is like that of a parrot but it is smaller in size. One of the characteristics of this bird is, that taking the bough or the perch in the grip of its claws it hangs itself up, head downwards, for the whole night.

and sings to itself. When the day breaks it settles itself on the bough. Although they say that animals also have a way of worshipping, it appears more likely that this act is natural to it. It drinks no water at all as it works like poison on its system although all animals survive by water".

درین روزها جانوری از ولایت زیر باد آورده بودند که رنگ اصل بدن او موافق به رنگ طوطی است لیکن در جثه از و کوچکتر است - یکے از خصوصیات این جانور آنست که تمام شب پائی خود را بر شاخ درختی و یا چوبی که او را بران نشانیده باشند بند کرده خود را سر شیب می سازد و باخود زمزمه میکند - چون روز شد بر بالای آن شاخ درخت می نشیند - اگرچه میگویند که جانوران را هم عبادتے می باشد اما غالب ظن آنست که این فعل طبعی او باشد - آب مطلق نمی خورد و در طبیعت او کار زهر میکند بانکه بقا ی حیوانات به آب است

(تزک ص ۱۳۳)



PLATE XVII B HORNBILL by MANSUR

The Metropolitan Museum of Art, New York;
purchase, 1955. Funds given by the Kevorkian Foundation
supplementing the Rogers Fund.

LAMMERGEIER

Gypaetus barbatus hemachalnus

[The latter part of the 19th regnal year of Jahangir, wherein the account of lammergeier occurs, falls beyond the purview of the present monograph (See preface p. 2). Since, however, Mirza Muhammad Hadi has adopted this information from the *Iqbalnamah-i Jahangiri*, which is equally authentic and close an account of Jahagir's reign, we have made an exception of this interesting passage. See *Iqbalnamah* etc., Nawal Kishore, A. H. 1286, p. 599.]

Argul in Hindi; *Okhab* in Chamba.

The whole of the Himalayas from Afghanistan to Bhutan; Salt ranges of the Punjab; Sind. Generally found above elevations of 4,500 ft. and has been observed to nest up to an altitude of 16,500 ft. Wollaston saw it during his Everest expedition, soaring as high as 24,000 ft.

G. himachalnus Hutton, *J.A.S.B.*, 1838, VII, 22 (Himalayas).

The bird's curious habit of eating bones after the manner described by Jahagir is acknowledged by modern authors and is reported as based on observation.

Incidently, the story goes in Iran and India that the person, on whom the *Huma* happens to cast its shadow, becomes king, implying, of course, the remoteness of the bird from human reach. To some it is a legendary bird of the *Arabian Nights*.

"A bird commonly known as *Huma* had been reported to exist

in the Pir Panjal Hills. The inhabitants of that place say that its food is bits of bones and that it is always observed soaring on its wings, sitting but rarely. As His Majesty has a singular propensity for ascertaining such matters, order was issued that anyone from among the guards who shot the bird by the gun and brought it to him would get a thousand rupees in reward. Luckily Jamal Khan Qarawal (Guard) shot one down and brought it. His Majesty ordered its crop to be examined so that its kind of food could be ascertained. The crop was cut open and small pieces of bones were apparent. The people of those hills stated that the means of the bird's sustenance was none but the pieces of bones. Soaring all the time in the air, it keeps eyeing at the ground and wherever it catches sight of a bone it collects it in the beak and rises high up. From there it throws the bone on the stone, breaking it into small pieces. These, it picks up and eats. In view of this, it appears most probable that the popularly known *Huma* is this very bird.

The end of its bill resembles that of the vulture; but the vulture has no head feathers, while the *Huma* has black feathers on the head. Weighed in His Majesty's presence it came to 415 *tolah* which is equal to 1,037.5 *Misqal*. (approximately 13·4 lb troy).

بعرض رسیدہ بود کہ در کوہ پیر پنجال جانوری میباشد مشہور بہمای و مردم آن سر زمین میگویند کہ طعمہ اش استخوان ریزہ است و پیوستہ بروی ہوا پرواز کنان بمشاہدہ می افتد و نشستہ کم و بیش می باشد چون خاطر اشرف اقدس بتحقیق این مقدمات توجہ مفرد دارد حکم شد کہ از قراولان ہر کس بہ تفنگ زدہ بحضور بیارد ہزار روپیہ انعام بیابد قضا را جمال خان قراول بہ بندوق زدہ بحضور اشرف آوردہ - چون زخم بپایش رسیدہ بود زندہ و تندرست بنظر اشرف در آمد فرمودند چینہ

دان آن را ملاحظه نمایند تا خورش او معلوم شود چینه دان را شگافتند از حوصله اش استخوان ریزه برآمد و مردم کوهستان معروض داشتند که مدار خوراک این بر استخوان ریزه هاست و همیشه برروی هوا پرواز کنان چشم بر زمین دارد هر جا که استخوانی بنظرش در آید به نول خود گرفته بلند میشود و از انجا بر زمین به سنگ می اندازد تا بشکند و ریزه ریزه شود آن گاه میچیند و میخورد - درین صورت غالب ظن آنکه هما ی مشهور همین است -

سر نولش به کل می ماند لیکن سر کل مرغ پر ندارد و این پر هائے سیاه دارد در حضور وزن فرمودند چهار صد و پانزده تولہ که یکهزار سی و هفت و نیم مثقال میباشد بوزن برآمد -
(تزک ص ۳۹۸ - ۹۹)

BIRDS NOT FOUND IN KASHMIR

P. stands for Persian : These birds are common to India and Iran.
H. stands for Hindi: birds not found in Iran and have no Persian names.
(*Tuzuk* p. 311)

	Vernacular names		English names	Species or genus only
1.	*Kulang* کلنگ	P.	Demoiselle crane	*Antrhopoides virgo*
2.	*Saras* سارس	H.	Sarus crane	*Antigone antigone*
3.	*Taus* طاؤس	P.	Peafowl	*Pavo cristatus* Linn.
4.	*Charz* چرز	P.	Florican	*Sypheotides indica* *Houbaropsis bengalensis*
5.	*Tughdari* تغدری	P.	Bustard	*Choriotis nigriceps*
6.	*Laglag* لگلگ	H.	Stork	*Ciconia episcopus*
7.	*Taghdagh* تغداغ	P.	Bustard	*Otis*
8.	*Karwanak* کروانک	P.	Stone-curlew	*Burhinus oedicnemus*



PLATE XVIII WHITEBACKED or BENGAL VULTURE by Mansur
Freer Gallery of Art, Washington D.C.

	Vernacular names		English names	Species or genus only
9.	*Zard Pilak* زرد پلک	P.	Bunting ?	*Melophus*
10.	*Nuqra* نقرہ	P.	White-legged courser	*Cursorius coromandalicus*
11.	*Hawasil* حواصل	P.	Pelican	*Pelecanus philipensis*
12.	*Qaz* قاز	P.	Goose	*Anser*
13.	*Konkla* (*Ghongla*) (گھونگلہ) کونکلہ	H.	Openbill	*Anastomus oscitans*
14.	*Durraj* دراج	P.	Partridge	*Perdix; Francolinus* (*Perdix hodgsoniae* & *Francolinus francolinus* found in Kashmir)
15.	*Sharak* شارک	P.	Starling	*Sturnus*
16.	*Nolsurkh* نولسرخ	P.	Pochard (red-billed)	*Netta rufina*
17.	*Haryal* ہریل	H.	Green pigeon	*Corcupus phoenicopterus*
18.	*Dheek* دھیک	H.	Adjutant	*Leptoptilos*
19.	*Koel* کویل	H.	Indian Cuckoo	*Eudynamis scolopaceus*

	Vernacular names		English names	Species or genus only
20.	*Shakarkhwara* شکرخوارہ	P.	Sunbird	*Nectarina*
21.	*Mohrkah* (*Mahokah*) مہرکہ (مہوکہ)	H.	Crow-pheasant	*Centropus*
22.	*Mohrlat* (*mahalat* ?) مہرلات (مہالت)	H.	Tree pie	*Dendrocitta vagabunda*
23.	*Hans* ہنس	H.	Bareheaded goose	*Anser indicus*
24.	*Kalchidi* کلچڑی	H.	Black Robin	*Saxicoloides*
25	*Tatiri* تتیری	H.	Lapwing; Sandpiper	*Lobivanellus* *Lobipluvia*
26.	*Bachirm* باچرم	P.		
27.	*Lelorah* لیلورہ (لڈورہ)	H.	Shrike	*Lanius*
28.	*Makshah* مکشہ	P.		
29.	*Taqlah* تقلہ	P.		
30.	*Musichah* موسیچہ	P.	Wood-pegion,	*Columba palumbus*

PART III

BOTANY

SAFFRON

Crocus sativus Linn.

Cultivated in Kashmir and Kishtwar. Native of South Europe.

Linn., *Sp. Pl.*, 36; *Royle Ill.*, 374, t. 91, f. 1; Stewart, *Panjab Pl.*, *239;* Boiss., *Fl. Orient.* V, 100; Reicb. *Ic. Fl. Germ*, t. 360; Benth. & Trim. *Med. Bot.* 274.

"In the case of all other plants of the world, the branches shoot out first and the leaves and flowers appear later. With saffron it is different. When the stem shows itself up above the dry ground, to a height of four finger-breadths, a four-petalled flower of the colour of *sausan* (probably Iris) blooms on it. In its middle are four filaments of the colour of orange, like in the safflower *(Carthamus tincturis* Linn.), as long as a finger-joint. This is saffron. It grows in unirrigated, unploughed land amongst the clods".

جمیع گلهای عالم اول شاخ بعد ازان برگ و گل بر می آرند
بخلاف گل زعفران که چون از زمین خشک چهار انگشت ساق
آن سر بر میزند گل سوسنی رنگ مشتمل بر چهار برگ شگفته
میگردد و چهار ریشه نارنجی مثل گل معصفر درمیان دارد



PLATE XIX

KING or BLACK VULTURE & HIMALAYAN GRIFFON by Mansur

The Metropolitan Museum of Art, N. York, purchase 1955. Funds given by The Kevorkian Foundation supplementing the Rogers Fund.

بدرازی یک بند انگشت - زعفران همین است - در زمین شمار
ناکرده آب نادادہ درمیان کلوخها بر می آید (تزک ص ۳۵)

Saffron flower is normally 6-petalled, but the petals are variable in number in rare instances. It is probable that Jahangir happended to examine a 4-petalled one. See also *Tuzuk* p. 315.

OLEANDER

Nerium odorum Soland.

Siwalik Range in the district of Dehra Dun and Saharanpur, Northern Oudh, the Himalayas from Nepal westward to Kashmir upto 6,500 ft., Punjab Salt Range extending to Baluchistan and Afghanistan, Central and South India.

Soland. in *Hort. Kew.*, ed. I, i, 297; Roxb, *Fl. Ind.* ii, 2; Kanjilal, *For. Fl.*, 236; *A. Dc. Prod.* viii, 420; Bot. Mag., 1799, 2032; Cooke., *Fl. Bomb.* ii, 143; Collet, *Fl. Sim.* 312; Prain, *Beng. Pl*, 676.

"I covered the whole distance from Pila to Bhakra (villages in the land of the Ghakkars in Baluchistan) through a canal which had water flowing in it. *Kaner* flowers which are of the kind of the peach blossom (*Prunus persica*) grow here in picturesque profusion and are fresh in the extreme. In the Indian soil, this flower is always in the bloom and is laden with fruits. Around this canal it grows in abundance".

از پیله تا بهکرا تمام راه درمیان رود خانه آمدم که آب روان
داشت و گلهای کثیر که از عالم شگوفه شفتالو در غایت رنگینی

است و شگفتگی و در زمین هندوستان این گل همیشه شگفته و
پر بار میباشد - در اطراف این رود خانه بسیار بود (تزک ص ۴۷)

DHAK

Butea frondosa Roxb.

Dhak, *Palas* in Hindi, *Chaleha* in Bundelkhand district.

Western Himalayas upto 4,000 ft. from the Punjab to Bengal, Siwalik Hills, Doab, Rajasthan, South India.

Roxb., *Cor. Pl.* i, 21, t. 21; Beddome, *Fl. Sylv.*, t. 176; Brand., *For. Fl.* 124; Rheede, *Hort. Mal.* vi, t. 16-17; Dalz & Gibs, *Bom. Fl.* 71.

"On this way (Suha to Bhakra, Baluchistan, en route to Kabul) the *Palas* flowers grow in profusion. This flower is also peculiar to the jungles of Hindustan. It has no scent, but its colour is flaming orange. The shrub has black roots and in height it is equal to the plant of *Gul-i Surkh* (*Rosa dameseena*)"

درین راه (در راه کابل میان سها و بهکرا در دیار گهکهران) گل پلاس
بسیاری شگفته بود این گل هم مخصوص جنگلها ی هندوستان
است - بو ندارد اما رنگش نارنجی آتشی است و بیخ آن سیاه
و بوته آن برابر بوته گل سرخ - (تزک ص ۴۷)

LOTUS

Nymphaea stellata Willd.

Nilofer in Persian and Urdu. *Kamudini* and *Bhamber* in Hindi.

Willd., *Sp. Pl.* ii, 1153; Roxb., *Fl. Ind.* ii, 579, W. & A. Prodr. 17; Hk. f. & T. *Fl. Ind.* 273, Dalz & Gibs, *Bomb, Fl.*, 6.

"*Nilofer* flower which in Hindi they call *Kamudini* is of three colours; white, blue and red. I had seen blue and white (varieties) previously, but a red one had not been observed untill now (*Aban* month of the *Ilahi* era, Regnal year 12=Oct. 1617). In this pond (at a village called Sarha, situated at the border of Malwa and Gujrat regions) I saw fresh *Nilofer* flowers of red and green variety."

[*N. stellata* is the blue lotus of India. White and pink varieties are also observed. The red *Nilofer* described here may be a variety of *N. rubra* Roxb.]

گل نیلوفر که بزبان هندی کمودنی گویند بسه رنگ میشود • سفید و کبود و سرخ پیش ازین کبود و سفید دیده شد اما سرخ تا حال بنظر درنیامده بود - درین نال (در قصبه سرها که به سرحد مالوه و گجرات واقع بود) سرخ گل تازه و سبز رنگ مشاهده شد - (تزک ص ۲۰۴)

Jahangir speaks more about this flower along with the Indian Lotus in the following item.

INDIAN LOTUS

Nelumbo nucifera Gaertn

Padma, *Kanwal* in Hindi.

Throughout India.

N. speciosum Willd., *Sp. Pl.* (1899) 1258; Roxb., *Fl. Ind.* ii, (1832), 647; Royle Ill. (1833-1840), 65.

"The *Kanwal* flower is larger than the *Kamudini*. Its colour is deep red. In Kashmir I have seen many hundred-petalled *Kanwal* flowers By nature this flower opens every day (and remains closed by night) and the black hornet which the people of Hindustan call as *Bhanwra* habitually sits on these flowers (the *Kanwal* and *Nilofer*) and in order to sap the juice that is found in the centres of both these flowers, goes inside them. Often it happens that the lotus flower becomes a bud and the hornet remains trapped inside it for the whole night. The same is the case with the *Kamudini* : when it becomes a flower again, the hornet appears from inside it and flies off."

گل کنول از کمودنی کلانتر میباشد رنگش سرخ چهره است من در کشمیر کنول صد برگ هم بسیار دیده ام و مقرر است که کنول روز میشگفد و زنبور سیاه که اهل هند آنرا بهونرا میگویند همیشه برین گلها ی نشیند و بجهت خوردن شهره که درمیان این هر دو گلست بد رون میرود و بسیار چنین واقع میشود که گل کنول غنچه میگردد و تمام شب بهونرا دران غنچه میماند و همین طور در گل کمودنی هم بعد از شگفتن از میان برآمده پرواز میکند - (تزک ص ۲۰۴)

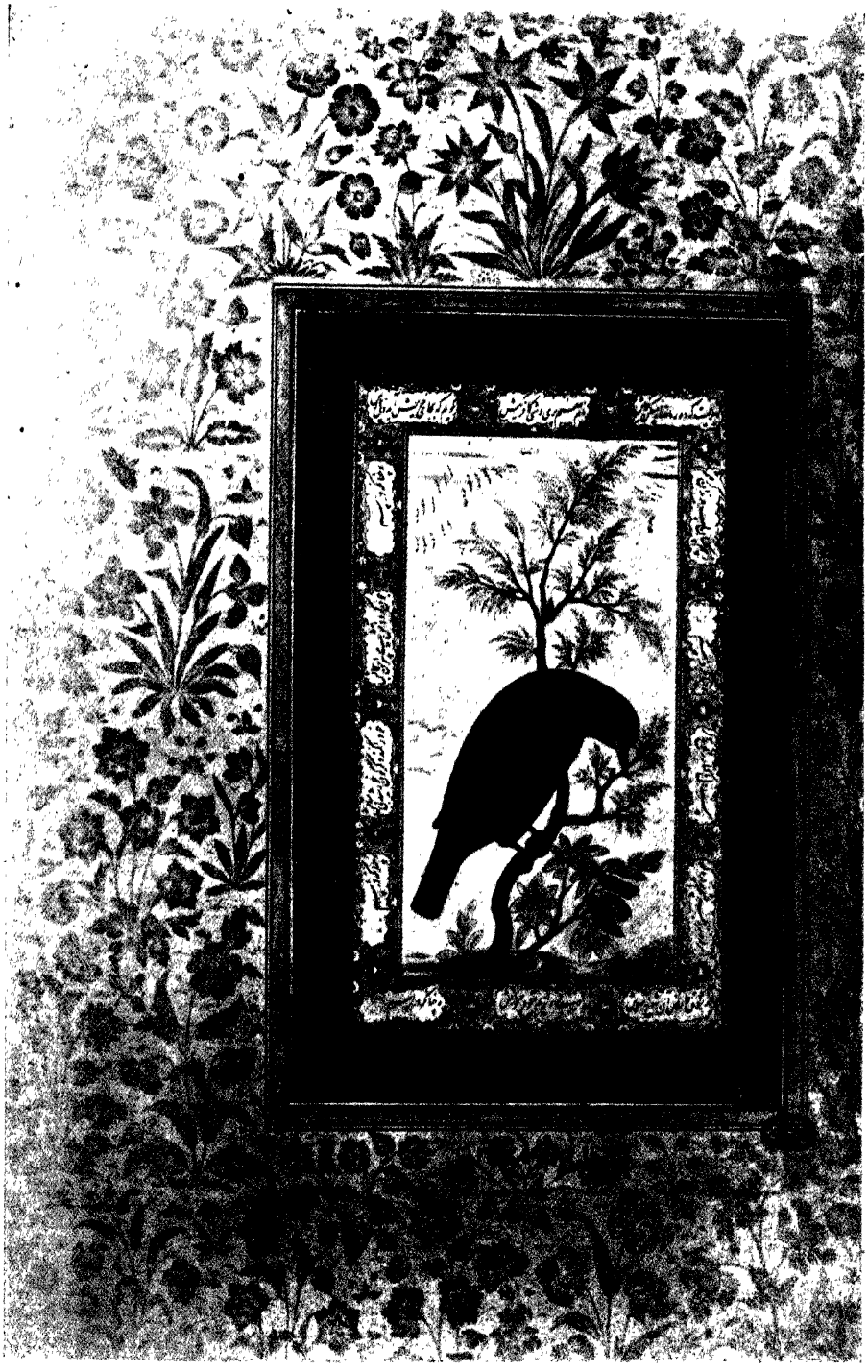


PLATE XX HIMALAYAN BLUE THROATED BARBET by Mansur
Victoria and Albert Museum, London.

CHAMPA

Michellia champaca Linn.

Temperate Himalayas from Nepal eastwards, Tenesserim, Nilgirees, Travancore, Java, extensively cultivated in the Upper Gangetic plain.

Linn. *Sp. Pl.*, 536; Roxb. *Fl. Ind.* ii, 656 ; *Dc. Prodr* , i, 79; *W. & A. Prodr.*, 6; *Royle Ill.*, 58; Hk. F. & T. *Fl. Ind.*, 79; Brand. *For. Fl.* 3.

"The *Champa* flower is exceedingly fragrant and charming. Its shape is like that of the saffron flower (*Crocus sativus*), but its colour is whitish yellow. The tree is very shapely, huge, thickly foliate and shady. During florescence days, one tree is enough to keep a whole garden full of fragrance."

گل چنپه گلے است در نهایت خوشبوئی و لطافت بهیات گل زعفران لیکن رنگ چنپه زرد مائل بسفید یست درخت آن در غایت موزونی است و کلان و پر برگ و شاخ و سایه دار میشود در ایام گل یک درخت باغی را معطر دارد - (تزک ص ۳)

(LAND LOTUS)

Hibiscus mutabilis ?

"In this region (Ruhtas, Punjab) a flower was observed, white inside and red outside, some were red inside and yellow outside.

In the Persian language it is called *Lalah-i Biganah. Thal* in Hindi means earth. Since the *kanwal* (lotus) is a water flower, they call this one as *Thal Kanwal* that is the lotus of the land".

درین سر زمین (رهتاس قلعه پنجاب) گلی بنظر در آمد درون سفید و بیرون سرخ و درون سرخ و بیرون زرد بفارسی لاله بیگانه میگویند و بهندی تهل بمعنی زمین است چون گل کدول مخصوص آب است این را تهل کدول نامیده اند یعنی کدول صحرائی - (تزک ص ۲۸۸)

HOLLYHOCK ?

In this place (village Sihlrud, near Naushehra) a flower was seen red like fire, shaped like the marsh-mallow flower (*Althea oficinalis*) but smaller than that, and several of them bunched closely together appeared as though they were a single blossom. Its tree is as tall as that of the apricot. The wild ones are also abundant in this hilly area, and are very fragrant. Its colour is inferior to that of the violet flower (*Viola canescence*).

درین سر زمین (موضع سهلرود نزد نوشهره) گل بنظر در آمد سرخ آتشین باندام گل ختمی اما ازو خورد تر و چندین گل یکجا نیک بیکدیگر شگفته از چنان مینماید که گویا یک گل است درختش مقدار درخت زرد آلو میشود و درین د یار کوه خود رو نیز بسیار بود در غایت خوشبوی رنگش از بنفشه کمتر -
(تزک ص ۲۸۹)

FRAGRANT FLOWERS OF INDIA

Vernacular names	English names	Species or genus only
Gul-i Champah گل چنپہ	Champa flower	*Michellia champaca*
Gul-i Keora گل کیورہ	Screw-pine	*Pandanus odoratissimus* *P. tectorius*

Sharply fragrant, prickly, colour of flower white, appearance like the dog-rose.

Rai Bel رائے بیل	Jasmine	*Jasminum sambuc*

Resembles the white jasmine in fragrance; corolla duplicate or triplicate.

Chanbeli چنبیلی	White jasmine	*Jasminum pubescence*

Same as *Yasman-ı sufid* of Iran, that is, the common Jasmine.

Maulsiri مولسری	Spanish-cherry	*Mimusops Elengi*

Tree tall, much branched, graceful, shady, fragrance of flower soothing.

Seoti سیوتی	Dog-rose	*Rosa glandulifera*

Appearance like the keora flower, but not prickly, colour of flower yellowish white.

Jahangir says that many more varieties of fragrant flowers grow in India but, for want of space, only the popular ones could be included in the *Memoirs*. *Tuzuk* p. 3.

FLOWERS OF KASHMIR

Vernacular names	English names	Species or genus only
Gul-i Bulanik گل بولانیک	crowned imperial lily	*Fritillaria imperialis*

Strange type of a flower, grows in bunches of five or six hanging upside down (by the bough) with several green ananas type leaves coming out from them. Colour of flower orange.

Lidarposh لدر پوش	thistle	

Colour : white, blue or red; a yellow spot in the centre; (pollen) grains resembling cottonwool fibres.

Arghwan-i Zard ارغوان زرد	buttercup	*Ranunculus*

Wild, grows on waysides.

Nargis نرگس	narcissus	*Narcissus poeticus*

Vernacular names	English names	Species or genus only
Banafshah بنفشه	violet flower	*viola odorata*
Gul-i Badam گل بادام	almond flower	*Prunus amygdalus, Amygdalus communis*

Budding season : beginning of *Farwardin* (1 *Far. Illahi*—21 March) in Kashmir, 9th and 10th of *Farwardin* (30 and 31 March) in the gardens of the city (Srinagar) and 1 *Isfandarmuz* (Feb. 19) outside the mountains (plains).

End of blossom corresponds with the beginning of the *Yasman-i Kabud*, the blue Jasmine.

Gul-i Shaftalu گل شفتالو	peach flower	*Prunus persica*

Budding season etc. as in the almond.

Lalah-i Chaughashi لالهٔ چوغاشی	red poppy	*Papaver orientale*

Spring flower; grown on roofs of houses.

Yasman Kabud یاسمن کبود	lit. blue jasmine	*Jasminum*
Yasman Sufid یاسمن سفید	jasmine white	*Jasminum pubescence*

Profusely cultivated in the gardens.

Vernacular names	English names	Spacies or genus only
Yasman sandali یاسمن صندلی	lit. sandal coloured jasmine	*Jasminum*

Confined to Kashmir; fragrant.

Nilofer نیلوفر	lotus	*Nymphaea stellata*
Kanwal کنول	Indian lotus	*Nymphaea purpurea*
Gul-i surkh گل سرخ	rose	*Rosa sp.*
Susan سوسن	iris ?	

Two varieties: one cultivated in the gardens is of a green colour (?), the other is wild, of lighter colour, but very fragrant.

Gul-i Jafri گل جعفری

Stem taller than a man's stature, flower big, very fragrant, but in some seasons just at the time of flowering, the blossoms are infested by insects, weaving webs like the spider's, destroying it and drying away the stem.

According to Jahangir, in Kashmir, flowers grow in inestimable abundance. It is impossible even to count the varieties. This selection is therefore confined only to those few which according to him appealed his curious eye most and may not be taken as a complete catalogue of Kashmir flowers.

(Names and notes from *Tuzuk*, pp. 294, 299, 300.)

SENSITIVE PLANT

Mimosa pudica, Linn.

Chhui-mui & *Lajwanti* in Hindi.

Throughout the hotter parts of India.

Linn., *Dc Prodr.* ii, 426 ; Roxb *Hor. Beng*, 41 ; Hooker *Fl. Ind.* ii, 564 ; *Wall Cat.* 5292.

In this water-pond (in Badarwala, a village in Gujrat) I saw a kind of herbage, the leaves of which, at the approach of the finger or a stick, shrank instantaneously and spread out again after sometime. Its leaves resemble those of the tamarind tree (*Tamarindus*) Its Arabic name is *Shajarul-Haya* (lit. the shy plant). In Hindi they call it *Lajwanti*. '*Laj*' means shyness (sp. feminine). Since it closes in at the approach of a hand or finger they attribute shyness to it. It is frankly a unique phenomenon and they have given it a pretty name too. It also grows on land they say.

در تال مذکور (جهنود در گجرات) گیاهی بنظر در آمد که بمجرد رسیدن انگشت و یا سر چوبے برگهایش نیز بهم می آورد و بعد از زمانے باز شگفته می گردد و برگش از عالم برگ درخت نمرهندیست - نامش بعربی شجرالحیااست و به هندی لجونتی می گویند و لاج بمعنی حیاست چون از رسیدن دست و یا انگشت بر می آرد ازین جهت به حیانسبت کرده اند - بے تکلف خالی از غرابتی نیست و نامش را هم نغزک ساخته اند و میگویند که در خشکی هم میشود - (تزک ص ۲۲۰)

PLANTAIN

Musa sapientum Linn,

Kela in Hindi.

Indigenous in Bihar, Eastern Himalayas to 4000 ft., cultivated throughout India and the tropics.

Roxb., *Hort Beng.*, 18 ; *Corom. Pl.*, t. 275 ; Rheade *Hort. Malab.* i, 17, t. 12-14 : Dalz and Gibs *Bomb. Fl. Supp.*, 88

At least ten principal varieties and subspecies with fruits in size from 2 in. to one ft. in length are cultivated in India.

"Recently they brought *son-kelah* for me. Until then I had never eaten the kind of it. It was as long as a finger. It is pretty sweet and palatable. Other bananas stand no comparison with it. It is not without hardness in effect on digestion ; so I ate only two of them and experienced heaviness in the stomach."

درین ایام بجهت من سون کیله آوردند تا امروز ازین قسم کیلهٔ خورده نشده بود در کلانی مقدار یک انگشت بوده باشد خیلے شیرین و راست مزه است هیچ نسبت بدیگر اقسام کیله ندارد غایتاً خالی از ثقلی نیست چنانچه دو عدد ازان من خوردم - اثر گرانی در خودیافتم - (تزک ص ۱۹۶ - ۱۹۷)



PLATE XXI

TREE PIE by Farrukh Beg
Freer Gallery of Art, Washington D.C.

Musa paradisiaca Linn.

Dehra Dun in the Khairi swamp, Nagsidh hills, Sahasradhara, the Himalayas (lower elevations) ; Chhota Nagpur.

Linn., *Sp. Pl.*, 1753, 1043; Cooke, *Fl. Bomb.* ii, 742; Rendle, *Fl. Pl.* Part I, 331; Prain, *Beng. Pl.*, 1050; Kanjhilal, *For. Fl.* ed. 2, 405.

"(In Mandu) I observed two things which I had never seen before in India. One was a plantain which grows wild in the jungles around this fort (of Mandu) . ...A sort of sweetmeat is obtained from the wild plantain which the dervishes and the poor people make their food. I was curious to know (the reason). It was revealed that the fruit of it happens to be rather astringent, tasteless. But in the lower part of the cone, wherefrom the actual fruit appears, there forms a layer of sweetmeat which has a relish, taste and juiciness exactly like that of Paludah (a sweet preparation of rice spaghetti and seed of *Ocymum pilosum*, served in ice-cool syrup). It appears that the people eat this."

دو چیز مشاهده افتاد (در ماندو) که در هیچ جا از هندوستان ندیده بودیم یکی درخت کیله که در اکثر صحرا های این قلعه (قلعه ماندو) رسته از کیله صحرائی یک قسم شیرینی بهم میرسد که اکثر درویشان و ارباب احتیاج آن را قوت میسازند در صدد تفحص آن شدم ظاهر شد که میوه آن چیزی زمخت و بیحلاوت است غایتاً در پایان طرف صنوبری شکل که اصل میوهٔ کیله ازان برون بر می آید یک پارچه شیرینی بسته که بعیله طعم و مزه و قوام پالوده دارد و ظاهر میگردد که مردم آنرا تناول مینمایند - (تزک ص ۱۸۹ و ۱۹۱)

NOTES ON FRUITS OF SOME REGIONS

In this section are included some special fruits of particular regions. From the point of view of botany there is very little of interest, in the descriptions given by Jahangir; hence the Persian text is being excluded. Some other data of historical and horticultural importance is however available. This is being given under the respective names of the fruits.

Vernacular names	English names	Species or genus only
KASHMIR		
Shah Alu شاہ آلو	sweet cherry	*Prunus avium*

Not cultivated in Kashmir before the arrival of Emperor Akbar. His noble Muhammad Quli Afshar introduced it from Kabul. Period of fruition : 4 *Urdibihisht* (April 25) to 15 *khurdad* (May 27). Gains colour in 23 days.

Zard Alu زرد آلو	apricot	*Prunus armeniaca*

Rarely grown before Akbar. Muhammad Quli Afshar popularised its cultivation. The graft was obtained from

the best tree, named as *Mirzai* from Shihr-Ara garden in Kabul.

Vernacular names	English names	Species or genus only
Naspati ناسپاتی	peer	*Pyrus communis*

Superior to that of Kabul and Badakhshan, almost as good as that of Samarqand.

Seb سیب	apple	*Melus sylvestris*
Amrud امرود	guava	*Psidium guava*

It is strange that Jahangir has included guava among the fruits of Kashmir, though, he says, it is of average quality.

Angur انگور	grape	*Vitis vinifera*

Generally sour.

Anar انار	pomogranate	*Punica granatum*

Rarely grown.

Tarbuz تربوز	water-melon	*Citrullus vulgaris*

Superior quality.

Vernacular names	English names	Species or genus only
Kharpuzah خوپزہ	melon	*Cucumis melo*

Very sweet and crisp ; but generally destroyed by insects.

Tut توت	mulberry	*Morus alba*

Grows wild in the jungles, bad to taste, except when cultivated in the gardens. It is used for breeding silk worm. *Shahtut* (*Morus indica*) not found in Kashmir.

Ashkin اشکن	straw-berry	*Fragaria vesca*

Earliest spring fruit to mature in Kashmir ; smaller than the sour cherry. Very sweet, for which reason Jahangir ordered it to be named as *khuskun*—delighting. Native of Badakhshan and Khurasan, where it is called as *Bijmad* or *Bajmad.*

Alu Balu آلو بالو	sour cherry	*Prunus cerassus*

Tuzuk pp. 300 & 306.

KABUL

Angur انگور	q. v.	

Superior quality, specially the varieties known as *Sahibi, Kishmishi* and *Husaini.*

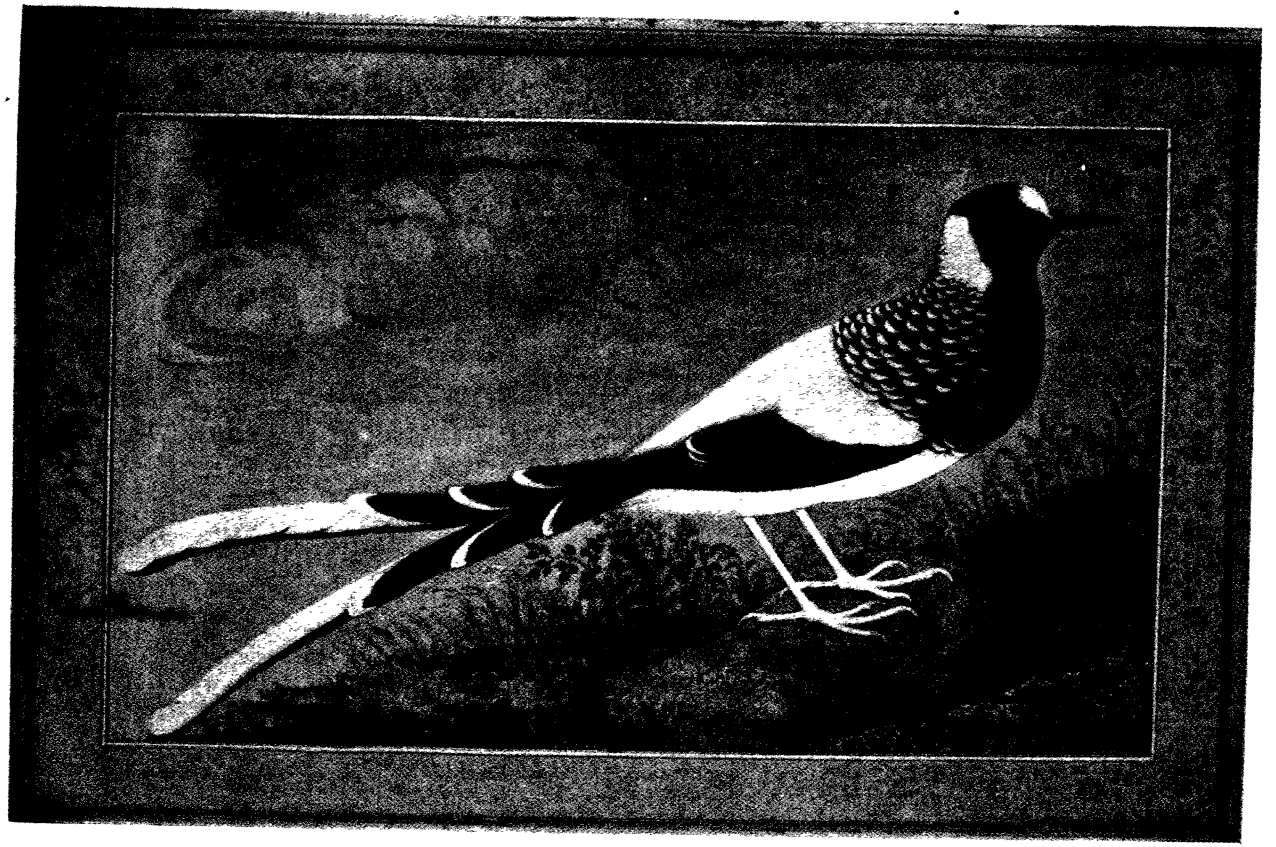


PLATE XXII

FORKTAIL by Abul-Hasan

The Metropolitan Museum of Art, N. York, purchase 1955. Funds given by The Kevorkian Foundation supplementing the Rogers Fund.

Vernacular names	English names	Species or genus only
Shah Alu شاہ آلو	q. v.	

Originally called *Kilas* (or *Gilas*) but since *Kilas* was a word for the lizard, Akbar changed the name to *Shah Alu*.

Zard Alu زرد آلو	q. v.	

Best apricot tree in *Shihr-Ara* garden, planted by Jahangir's uncle, Mirza Muhammad Hakim and was called after him as *Mirzai*.

Shaftalu شفتالو	peach	*Prunus persica*

Superior quality.

Tuzuk pp. 55 & 193.

KISHTWAR

Natani نتانی	orange	*Citrus aurantium*

Superior quality.

Turanj تورنج	citron	*Citrus medica*

Superior quality.

Vernacular names	English names	Species or genus only
Hind-dana هند دانا	water-melon	*Citrullus vulgaris*

Superior quality.

Kharpuzah خرپوزہ	q. v.	

Superior quality, Kashmir variety.

Angur انگور	q. v.	
Shaftalu شفتالو	q. v.	
Zard Alu زرد آلو	q. v.	
Amrud امرود	q. v.	

Sour, can be good if carefully cultivated.

Jau جو	barley	*Hordeum vulgare*
Adas عدس	lentils	*Lens cilinaris* syn. *L. esculenta*
Mash ماش	a pulse	*Phaseolus radiatus*
Arzan ارزن	millet	*Panicum miliaceum*

Vernacular names	English names	Species or genus only
Shali شالی	rice	*Oryza sativa*

Less abundant than in Kashmir.

Zafran زعفران	saffron	*Crocus sativus*

Superior to that of Kashmir.

MISCELLANEOUS

WEIGHT OF A SWEET CHERRY

Prunus avium

"The sweet cherry of Kashmir is no inferior to that of Kabul. On the other hand it is larger. A piece that was largest of all weighed one *tank* and five *surkhs*."

شاه آلوی کشمیر از کابل کمتر نمی شود بلکه بالیده تر است
آنچه از همه کلان تر بود یک تانک و پنج سرخ بوزن در آمد -
(تزک ص ۳۰۷)

1 *Tank*=about 178 grains and one *surkh*=12.8 gr. troy. Weight of the fruit was about 190.8 grains troy.

WEIGHT OF A STRAW-BERRY

Fragaria vesca

"I ordered that from now on (1620, Regnal year 15), *Ashkin* should be called *Khushkun*. It grows commonly in Badakhshan and Khurasan. There the people call it as *Bijmad* (or *Bajmad*). One that was the largest of all weighed half a *misqal*".

حکم فرمودم که بعد ازین اشکن را خوشکن می گفته باشند ظاهرا در کوهستان بدخشان و خراسان شود - مردم انجا بجمد می گویند - انچه از همه کلا نتر است نیم مثقال بوزن در آمد - (تزک ص ۳۰۶)

1 *misqal*=63½ grains troy. Weight of the fruit was 32¾ gr. troy.

WEIGHT OF A PEACH

Prunus persica

"From Ustaluf (Afghanistan) they brought a peach of the size of a nutmeg (*Myristica magnifica*). Never was a peach so big as this observed before. I ordered them to weigh it. It came to sixty three *Akbari rupya* which is equal to sixty *tolah*".

از استالف شفتالوی آوردند برابر سربه کلا نی که تا حال با این کلا نی شفتالو دیده نه شده بود - فرمودم که بوزن در آوردند - بقدر شصت و سه روپیه اکبری که شصت تولهٔ بوده باشد بر آمد - (تزک ص ۵۵)

1 *tolah Akbari* being equal to 185.5 grains troy approximately, the weight of the peach was 23.18 oz. troy.

The weight of Akbar's rupee varied from issue to issue by a few grains. The heaviest weighed 178 grains troy. The one

referred to by Jahangir must have weighed 176.66 grains approximately. See Irfan Habib, *The Agrarian system of Mughal India*, 1963, p. 366, n. 4 and p. 381, n. 9 *cf.* S. H. Hodivala, *Historical Studies in Mughal Numismatics*, Cal. 1923, pp. 224-34.

WEIGHT OF A LEMON

Citrus medica

"In this region (Mahmudabad, Gujrat) lemon grows in abundance and is of a big size. They had brought a few (for me) from the garden of Kaku, a hindu. These were exceedingly fine and large. I ordered one that was the biggest to be weighed. It came to 7 *tolah*".

درین ملک (محمود آباد - گجرات) لیمون فراوان است و بالیده میشود و از باغ کاکو نام هندوئے چند لیمون آورده بودند بغایت لطیف و بالیده - یکی را که از همه کلان تر بود فرمودم که وزن کنند - هفت تولہ برآمد - (تزک ص ۲۴۵)

The lemon weighed 2.64 oz. troy approximately.

WEIGHT OF A MANGO

Mangifera indica

"Lots of mangoes had been brought for the royal fruit

store-house from various parts of the Deccan, Burhanpur and the parganah of Malwah. Although these places have a reputation for the quality of mangoes, in matters of sweetness, least threadiness of the pulp and enormity of the fruit's size, few places compare with this region (Agra). Often I have ordered them to weigh it in my presence. It came to one seer and a quarter, even more."

انبه بسیاری از اطراف ولایت دکن و برهانپور و گجرات و پرگنات مالوه بمیوه خانه خاص شریفه آورده بودند - بانبه این ولایت بخوش انبگی معروف و مشهور اند در شیرنی و کم ریشگی و کلا نی انبه کم جای برابر انبه این ولایت میکند چنانچه مکرر در حضور فرمودم که بوزن در آوردند یکسیر و یکپاؤ بلکه چیزی زیاده ظاهر گشت - (تزک ص ۱۸۶ - ۱۸۷)

One seer *Jahangiri*=26.552 oz. Weight of mango was 32.190 oz.

Special mention is made of the mangoes of Chhapramau which, Jahangir says, excel in respect of "the fineness of the juice, deliciousness of the pulp and easy digestibility", from all others grown either in Agra district or any where else in Hindustan.

OFF-SEASON FRUITION OF MULBERRY

Morus alba

In this winter season (9th regnal year 1614) in Lahore a mulberry tree came to fruit, as sweet and pleasant to taste as

it is in season. This event has been recorded by the chroniclers of that place.

در همین فصل دی در لاهور درخت توت بار آورده و بهمان شیرینی و لطافتی که در وقت خود میرساند رسانید.....این معنی را واقع نویسان آنجا نوشته بودند - (تزک ص ۱۳۳)

Dai is the 10th month of the Ilahi Akbari era corresponding to December 22 to January 19. Figuratively the word is also used in the sense of winter or autumn season.

PROLONGATION OF MANGO SEASON

From the following passage it appears that Muqarrab Khan, a close noble of Jahangir, knew some method of preserving mangoes on the tree for more than two months after the season. We are not told of the method but the fact itself is not without interest.

"Mango season in India does not normally last beyond the month of *Tir*. Muqarrab Khan had laid gardens in the parganah of Kairanah (now in District Muzaffarnagar) which is his ancestral home, and preserved the mangoes for two months over the season in such a manner that every day he sent them fresh for the royal fruit store-house. Altogether unusual as it looked, the matter has been recorded."

ایام بودن انبه در ولایت هندوستان تا آواخر تیر ماه بیش نیست - مقرب خان در پرگنه کرانه که وطن آبا و اجداد اوست

باغات احداث نموده انبهها را تا دو ماه دیگر زیاده بر ایام بودن آن بنوعی محافظت نموده و سامان کرده بود که همه روزه انبه تازه بمیوه خانه خاصه میرسانید چون این امر فی الجمله غرابتی داشت نوشته شد - (تزک ص ۱۹۲)

Tir : fourth month of the Ilahi Akbari era, corresponding to June 23 to July 23, with occasional difference of one day.

Writing the account of his 12th and 13th regnal years, Jahangir tell us again.

"This year (R.Y. 12) Muqarrab Khan sent the mangoes of Gujrat by runners-post upto the 23rd of the month of *Mihr*-October 17 ;" and "This year (R.Y. 13) I ate mangoes upto the 6th of the month of *Mihr* (Sept. 3)".

امسال تا بیست و سوئم ماه مهر مقربخان انبه گجرات را بتداک چوکی رسانید (تزک ص ۱۹۷)

امسال (جشن سیزد همین) تا تاریخ ششم مهر ماه انبه خورد شد - (تزک ص ۲۴۵)

TWO CROPS OF GRAPE IN ONE YEAR

Vitis vinifera

In Dhar, which is a town in Malwah, the vine yields two crops in one year, in the beginning of Pisces and in early Leo. But in Pisces (only) the grape is sweet.

در قصبه د هار که از جاهای مقرر مالوه است تا که در سالی دو مرتبه انگور میدهد - در اول حوت در ابتدا ی اسد اما در حوت انگور شیرین است - (تزک ص ۱۹۷)

Pisces & Leo : when the sun enters the zodiacal signs of Pisces and Leo, implying the months of *Isfandarmuz*, 12th of Ilahi Akbari Year corresponding to Feb. 19th to March 20 and *Amurdad*, 5th Ilahi month, corresponding to July 24 to August 23 respectively. The times of fruition of the grape therefore are approximately third quarter of February and the last quarter of July respectively.

RECORD MEASUREMENTS OF A BANYAN TREE

Ficus bengalensis Linn.

"At Shekhupur, a village in the parganah of Daulatabad, I observed a banyan tree of a gigantic size and height. The girth of the trunk measured 18½ *gaz* and height from the base to the pinnacle 128¼ *dira*. Its circumference around the branches which, shooting out of the trunk, provided the shade below was 203¼ *dira*, and one of its branches was 40 *gaz* long."

در موضع شیخوپور از مضافات پرگنه مذکور (دولت آباد) درخت بری بلنظر در آمد درغایت بزرگی و تناوری - دور تنه آن هژده گز و نیم و بلندی از بیخ تا سر شاخ یکصد و بست و هشت درع و یکهاؤ و اطراف شاخها که از تنه جدا شده سایه گستر گردیده است دویست و سه درع و نیم و شاخی چهل گز -
(تزک ص ۱۷۷ - ۱۷۸)

1 *gaz* or *dira* Jahangiri was equal to 32.45 inches. Approximate measurements in ft. : girth 48, height 161, circumference 313 and branch 61. Hooker records the height of a banyan tree as 70-110 ft. *Fl. I.*, v., 500.

UNUSUAL FEATURES OF A DATE TREE

Phoenix sylvestris

"I saw a date tree (at Qazian, a suburb of Ujjain) of strange appearance and features. The main part of this tree was a single trunk. At the height of 6 *gaz* it split into two branches, being 10 and 9½ *gaz* respectively. Between them there was a distance of 4½ *gaz*. Measuring from the ground upto the place where the leaves and twigs began it was 16 *gaz* on the side of the longer branch, and 15½ *gaz* on the side of the other. From the place where the leaves and twigs began, to the apex of the tree, it measured 2⅓ *gaz*. The girth of the trunk was 2¾ *gaz*. I ordered them to raise a platform, 3 *gaz* high, all round it. It appeared exceedingly straight and graceful. I ordered the painters to draw its likeness for the *Jahangirnamah*."

درین منزل (دہ قاضیان در حوالئی اجین) درخت خرمائے بنظر آمد کہ اندام و وضعش خیلے غرابت داشت - اصل این درخت یک تنہ دارد - چون شش گز بالا رفتہ دو شاخ شدہ یک شاخ آن دہ گز و شاخ دیگر نہ گز و نیم - فاصلہ میان ہر دو شاخ چہار و نیم گز - از زمین تا جائیکہ شاخ و برگ برآمدہ از طرف یک شاخ کلان شانزدہ گز - از طرف شاخ دیگر پانزدہ و نیم گز و از جائیکہ

شاخ و برگ سبز شده تا سر درخت دو نیم گز و دور آن دو نیم گز و یکپاؤ - فرمودم که چبوترہ به بلندی سه گز دور آن بندند - در نهایت راستی و موزونی بود - مصوران را گفتم که در مجالس جهانگیرنامه شبیه آن را بکشند - (تزک ص ۱۷۴)

(Equivalent measurements in ft., roughly: trunk 15, branches 26 and 25, distance between the two 12, height from base to lowest growth of leaves 42 on the side of the longer branch and 40 on the side of the shorter, remaining height 6½ (total 46½), girth 7.

Several species of ***Phoenix*** found in India, both wild and cultivated, low and tall, stem normally single, erect, rarely branched, uniquely such as described above. Tallest specimen recorded by Hooker 50 ft. (See *Fl.I.* VI, pp. 224-228).

GARDENS

Apart from a naturalistic bent of mind, a keen aesthetical sense underlies Jahangir's interest in gardens.

Going through the pages of the *Tuzuk* one frequently finds him stop in the middle of a narrative to take a long stroll in a garden, to admire a tall cypress or to give a name to a peach-tree, to order for laying a new, or grant a munificent purse for looking after a neglected wayside garden. Some of them he describes at length.

The number of gardens mentioned in the *Tuzuk* is large. Only some important ones have been included in the regionwise list that follows, along with brief notes wherever available.

KABUL

SHAHR-ARA GARDEN : Named after and laid by Shahr-Ara Begum, daughter of Mirza Abu Said and first aunt of Babur (Firdaus Makani). Its freshness was to such an extent that "walking on its lawns with the shoes on would be an act of digression from refinement and etiquette". Known for the quality of grapes, (*Tuzuk* p. 51).

SURAT KHANAH BAGH: It had a pine tree that was the tallest in the whole of Kabul. (*ibid.*)

CHAHAR BAGH : Biggest in Kabul. (*ibid.*)

BAGH-I BUGAH BEGUM : Founded by Bugah Begum, elder step-mother of Akbar. (*ibid.*)

BAGH-I MARYAM MAKANI : Laid by Maryam Makani, grand-mother of Jahangir. (*ibid.*)

JAHAN-ARA BAGH : In the vicinity (of Shahr-Ara Garden) I saw a suitable tract of land, bought it from the owner and ordered that, taking in the middle the stream that flowed in it from the wayside, they should lay a garden unequalled in the whole world. I gave it the name of Jahan-Ara (decorator of the world). (*ibid.*)

MAHTAB BAGH (*ibid.*)

BAGH-I WAFA : In the suburb of Kabul. (p. 212)

AGRA

BAGH-I NURMANZIL : Area : 330 *jarib* by the Ilahi yard ; walled on all the four sides, a grand building in the middle, tanks fed by a mainstream ; a great well outside the gate from which thirty two pairs of bullocks drew water ; other wells for irrigating orchards and feeding fountains and artificial water-falls, a pond in the centre. Fifty thousand rupees had been spent at the time of writing and was not yet complete. Plantation work was still to be done. Final estimate about two lakh rupees. (p. 264)

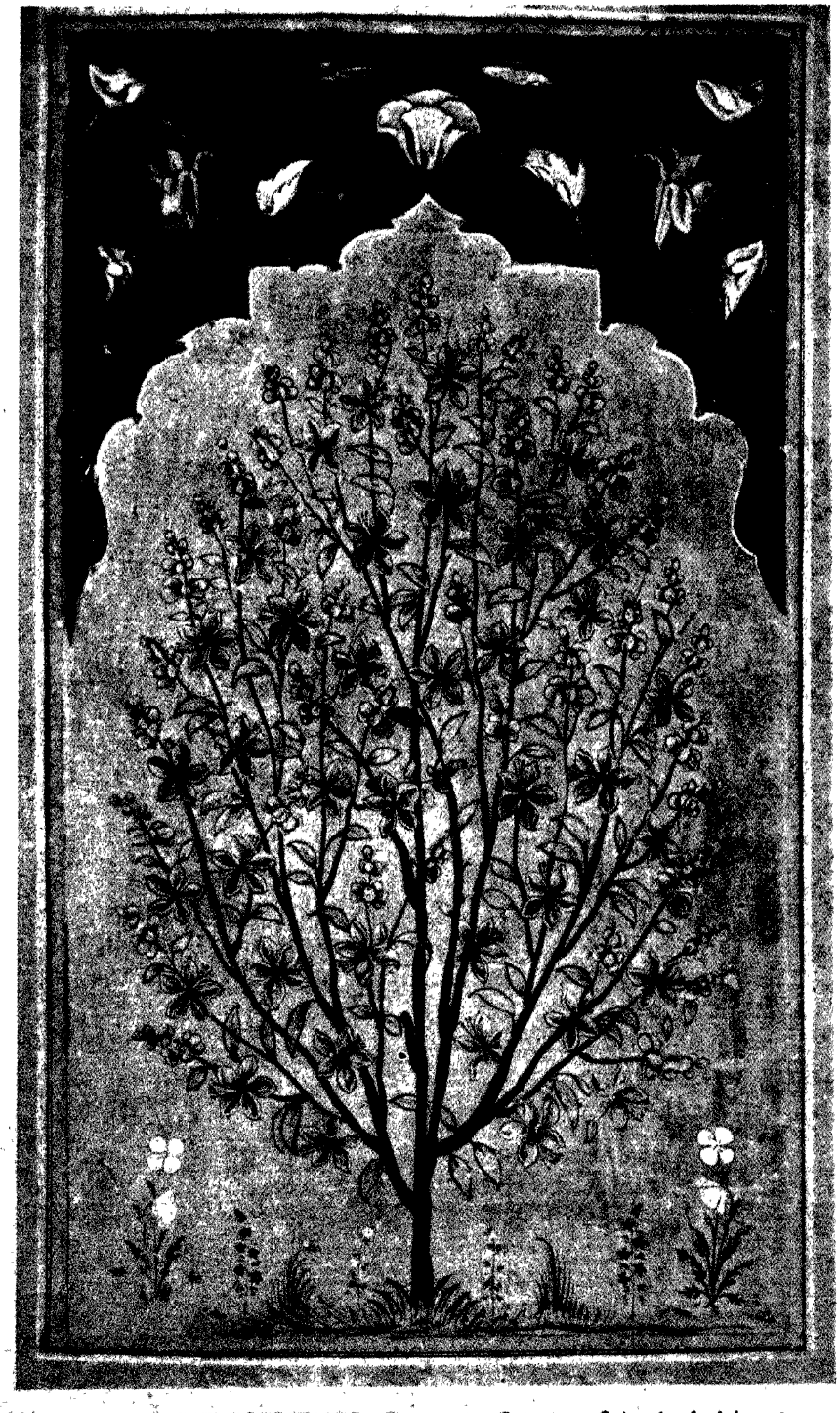


PLATE XXIII **INFLORESCENCE**, Decorative Painting, School of Jahangir.
The Metropolitan Museum of Art, New York.

GUL AFSHAN BAGH : Situated at the bank of Jamuna river. Khwajah Jahan a noble was entrusted with its supervision. (pp. 3 & 274)

DEHRA-SARA BAGH : (p. 113)

BAGH-I SARAS : (p. 264),

MANDAKAR BAGH : Near Agra (p. 80)

KAIRANA

BAGH-I MUQARRAB KHAN : Laid in 140 bigah by Muqarrab Khan a close noble of Jahangir. All sorts of fruit-trees of hot and cold climate regions, including pistachio (*Pistachia vera*) grew in it. 300 cypress trees were counted. Cisterns were laid in masonry and buildings were constructed. Also known for mangoes. (p. 283)

SIHRAND (Sirhind)

BAGH-I SIHRAND : It was old and neglected. Khwajah Uwais, an expert in agriculture was made the *Karori* (tax-collector) of Sihrand especially for the purpose of renovating it. Old trees were removed, new ones were planted. (*ibid.*)

AHMADABAD

RUSTAM-BADI : Laid and named by Shah Murad, cousin of Jahangir, after his own son Rustam. (p. 211)

FATH BAGH : Situated by the village of Sir-kher near Ahmadabad. (p. 212)

BAGH-I KAKU : Special fruit, lemon.

KASHMIR

AISHABAD BAGH : A flower with hundred petals (probably lotus) was observed here. Apples sour. (p. 303)

NUR-AFZA BAGH : Renovated by order of Jahangir, under the supervision of Mutamad Khan and named by the former. (pp. 302 & 307)

ISHRAT-AFZA BAGH : (p. 307)

LAHORE

RAMDAS BAGH : (p. 34)

BAGH-I DIL-AMEZ : On the bank of Ravi. (pp. 43 & 62)

PART IV

CHEMICAL TECHNOLOGY

ROSE SCENT

"*Itr-i Jahangiri* is a discovery which was made during my reign through the efforts of the mother of Nur-Jahan Begum. When she was making rose water, a scum formed on the surface of the dishes into which the hot rose water was poured from the jugs. She collected this scum little by little. When much rose water was obtained, a sensible portion of the scum was collected. Salima Sultan (may God enlighten her grave) was present. She gave it the name of *Itr-i Jahangiri*."

عطر جهانگیری...بسعئی والدهٔ نورجهان بیگم بظهور آمد در هنگامی که گلاب می گیرند فی الجمله چربی بر بالا ی طر فهای که گلاب را گرم از کوزه بر می آرند در آنجا ظاهر میشود - آن چربی را اندک اندک جمعه ساختند - چون از گل بسیاری گلاب گرفته شود قدر محسوسی ازان چربی بهم رسد...سلیمه سلطان نورالله مرقدها حاضر بودند این روغن را عطر جهانگیری نام نهادند (توزک ص ۱۳۲ - ۱۳۳)

SIR BEVERAGE

In this country (Pigli, east of Attuck) they make a beverage from bread and rice, which they call *Sir*. It is much stronger

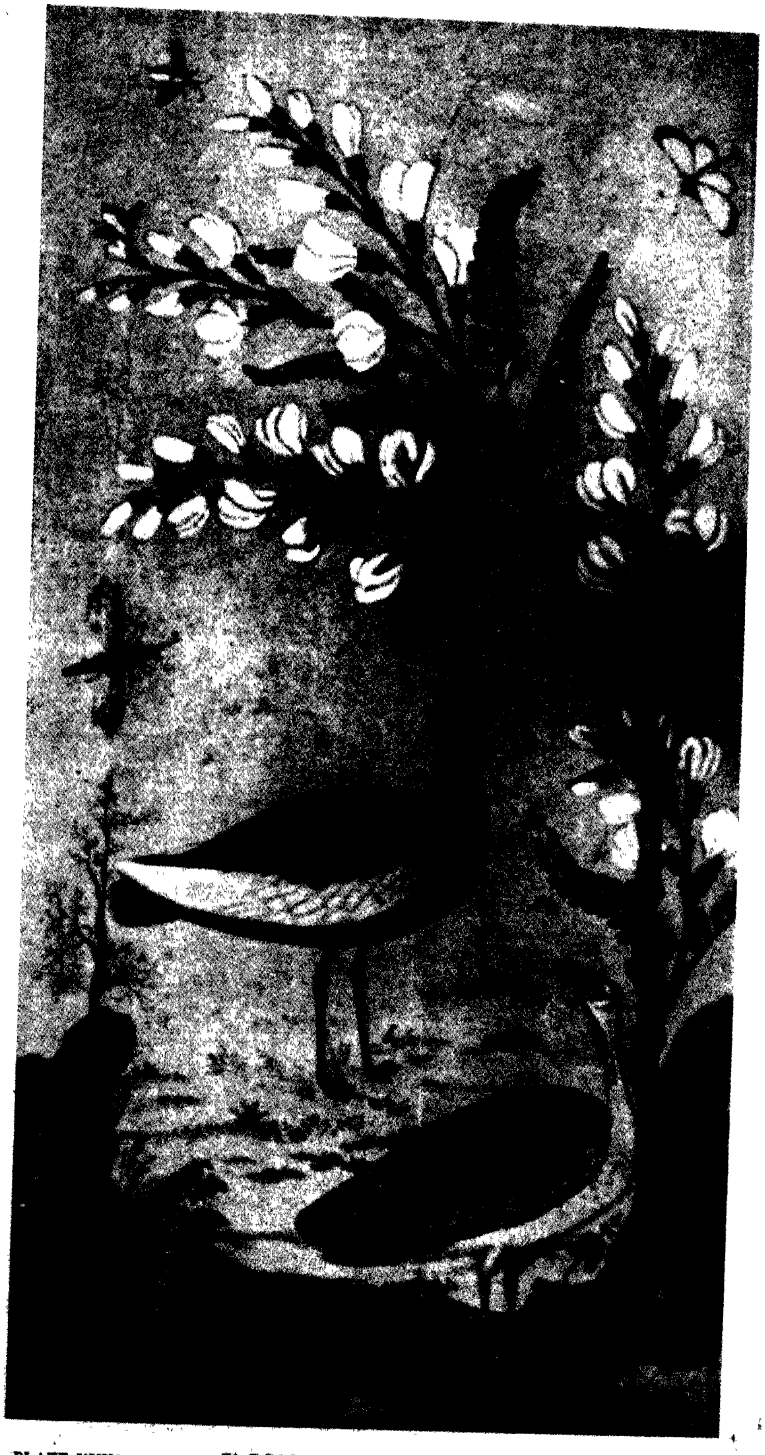


PLATE XXIV FLORICANS (male and famale) WITH PLANT OF PEA FAMILY by Mansur.

than *Buzah* and the older it is the better. This *sir* is their chief sustenance. They keep it in a jar and fastening a lid on it, store it in the house for two or three years. Then they take out the pure water that clears out to the surface and call it *Achhi*. *Achhi* can be ten years old, even older. The older it is the better it is ; the least age being one year. I drank it once in order to test it. Its effect is appetising, but not without heaviness. I came to know that they mix a little hemp also in it.

درین ملک (یگلی در مشرق اتک) بوزه میسازند از نان و بر نیج که آن را سر میگویند غایتاً از بوزه بسیار قند تر و مدار خوراک این مردم بر سر است و هر چند کهنه تر باشد بهتر است و این سر را در خم کرده و سر خم را گرفته محکم بسته دو سال و سه سال در خانه نگاه می دارند و بعد ازان زلال روئی خم را گرفته آنرا آچهی می نامند و آچهی ده ساله هم میباشد و بیش - آنها هر چند کهن سال تر بهتر و اقل مدت یکسال است ... یکبار برای امتحان خوردم . . . کیفش مشهی است اما خالی از کرختی نیست - معلوم شد که اندک بنگے هم همراه می سازند - (تزک ص ۲۹۰)

PART V

MEDICAL PHENOMENA

PLAGUE

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"In the 10th year after my accession (1615) a great pestilence appeared in some places in Hindustan. The calamity commenced in the parganahs of the Punjab, and by degrees the contagion spread to the city of Lahore. Many of the people, Musalmans and Hindus, perished by the disease. Then it spread to Sirhind and the Doab upto Delhi and the surrounding parganahs, laying them waste. These days (11th regnal year) it has greatly diminished. It became known from the men of age and old books of history that this disease had never shown itself before in Iran. Physicians and learned men were questioned. Some said that it came because there had been drought for two years in succession and little rainfall. Some others attributed the calamity to corruption of the air caused by scarcity and drought. Some ascribed it to other causes. God knows the truth. Wisdom is of Allah and we must submit to His decrees".

در اثنای سال دهم جلوس وبا ی عظیم در بعضی از جاهای هندوستان ظاهر گشت - و آغاز این بلیه از پرگنات پنجاب ظهور نموده رفته رفته بشهر لهور سرایت کرد و خلق بسیاری از مسلمان و هندو بدین علت تلف شد ند بعد ازان بسرهند و میان دواب تا دهلی و پرگنات اطراف آن رسیده دیها و پرگنها را خراب ساخت - در این ایام (جشن یازد همین نوروز) تخفیف تمام دارد و از مردم دراز عمر و از تواریخ پیشینیان ظاهر شد که این

مرض در ولایت هرگز رخ نه نموده - سبب آن از حکما و دانایان پرسیده شد بعض گفتند که چون دو سال پے در پے خشکی رویداد و باران برساتی کمی کرد بعض گفتند که بواسطهٔ عفونت هوا که از سمر خشکی و کمی بهم رسیده این حادثه رویداد - بعض حواله بامور دیگر میکردند - العلم عندالله تقدیرات الهی را گردن باید نهاد -

During this time (13th regnal year) the officers of the State brought to my notice for the second time that plague had spread in Agra. As a result, every day about hundred persons were dying away after developing the grains of plague in the pit of the arm or the thigh or the neck. This is the third successive year that there has been heavy downpour during the winter season, totally disappearing at the eve of summer. Stranger still, that while this time it (plague) has spread through all the towns and villages situated in the area surrounding Agra, it has had not the least effect on Fathpur (sikri)....

The daughter of the late Asaf Khan who is now the wife of Abdullah Khan, son of Khan-i Azam related a curious incident (to me). Great care she took to ascertain the correctness of the facts, and I record it here as it seems strange to me.

She said, "One day, in the courtyard of my house, I happened to see a mouse in a distracted state. Like someone gone tipsy, it ran about in every direction rising and falling and did not know where to go. I asked one of my girls to take it by the tail and throw it to the cat. Fondly the cat jumped up from its place, seized it in its mouth, but dropped it instantly and showed great disgust. By degrees an expression of trouble and distress showed itself on its face. The next day it was nearly dead when it occurred to me to give it a little *Tiryaq-i Faruq*. When its mouth was opened its palate and tongue appeared black. It passed three days in a state of misery, on the fourth day it



PLATE XXV A DECORATIVE SPIKE by Mansur

Hermitage, Leningrad, through the courtesy of Institute of Peoples of Asia, Leningrad.

came to its senses. After this, the grains of plague appeared on the body of the girl. From excess of inflammation and pain she had no rest. Her colour changed to blackish yellow, and temperature rose to a burning pitch. Next day she passed loose motions and died."

"In the same manner about seven or eight persons died in the house. Some, who were ill, abandoned the house. I shifted to the garden. Those who were seriously ill died in the garden. But, no one else developed the grains there. In short, within a period of eight or nine days, seventeen persons passed away." She also said that if those who had developed the grains called another person for water to drink or to wash the latter also caught the disease."

درین ولا (جشن سیزدهمین نوروز) مکرر از عرائض دولتخواهان معروض گشت که علت طاعون در شهر آگره شائع است - چنانچه در روزی قریب بصد کس کم و زیاده در زیر بغل و یا کنج ران یا در تهه گلو دانه بر آورده ضائع میشوند - و این سال سیوم است که در موسم زمستان طغیان میکند و آغاز تابستان معدوم می گردد و از غرائب آنکه درین سال بجمیع قصبات و قریات نواحی آگره سرایت کرده در فتحپور اصلا اثر او ظاهر نشده... صبیه آصفخان مرحوم که در خانه عبدالله خان پسر خان اعظم است نقلی عجیب و غریب گذرانیده نهایت تاکید در تصحیح آن نمود بجهت غرابت مرقوم گشت - گفت روزی در صحن خانه موش بنظر در آمد سراسیمه افتان و خیزان بطور مستان هر سو میرفت و نمی دانست که بکجا میرود - به یکے از کنیزان گفتم که دم آن را گرفته پیش گربه انداخت - گربه بشوق و میل از جای جسته موش را بدهن گرفت و فی الفور گذاشته نفرت ظاهر ساخت - رفته رفته آثار ملال و آزردگی از چهرهٔ او پیدا شد روز دیگر نزدیک مردن رسید - بخاطر گذشت که اندک تریاق

فاروق باید داد - چون دهانش کشوده شد کام و زبان سیاه بنظر در آمد - تا سه روز بحال تباه گذرانیده در چهارم بهوش آمد - بعد ازان کنیزکے را دانه طاعون ظاهر شد و از افراط سوزش و فزونی درد آرام و قرار در و نمانده و رنگش متغیر گشت - زردی بسیاهی مایل و تپ محرق کرد - روز دیگر از پایان اطلاق شده در گذشت و به همین روش هفت و هشت کس دران خانه ضائع گشتند و چند ی بیمار بودند که ازان منزل برآمده بباغ رفتم آنها نیک بیماری داشتند در باغ فوت شدند و در انجا دیگری دانه بر نیاورد - مجملاً در عرض هشت و نهه روز هفتده کس مسافر راه عدم شوند و نیز گفت آنها که دانه بر آورده بودند اگر آب جهت خوردن یا غسل کردن از دیگری طلبیدند ی فی الفور درو هم سرایت کردی - (تزک ص ۲۵۹ - ۶۰)

MAD DOG-BITE

2

I knew that every animal or living thing bitten by a mad dog died, but this had not been ascertained in the case of an elephant. In my time it so happened that one night a mad dog came into the place where was tied one of my elephants, Gajpati by name, and bit at the foot of a female elephant that stood by him (Gajpati). Instantly the female screamed. The elephant keepers at once rushed in and the dog made his way to a thorn brake nearby. Sometime later the dog came in again, this time to my private elephant and bit at his foreleg. The elephant killed it. When a month and five days had passed after this event, one cloudy day, the growling of thunder came

to the ear of the female elephant in the midst of eating. Of a sudden she raised a cry. Her limbs began to tremble. She threw herself on the ground and rose again. For seven days she emitted water from the mouth. Suddenly she would raise a cry and show distress. However much the elephant keepers did to cure him, had no effect. On the eighth day she fell and died.

A month later they drove the male elephant to the bank of a river in the plain. The atmosphere became cloudy and the thunder roared the same way. In the height of excitement, consternation took hold of him and the elephant fell to the ground. With a thousand difficulties the drivers brought him back to his place ; and after the same interval and in the same manner that the female had suffered, the male elephant also laid his life.

It is a matter of great surprise that an animal of such size and bulk should be so much affected by a little wound inflicted on it by such a weak creature.

میدانستم که سگ دیوانه هر جانوری و جانداری که بگزدالبته میمیرد - غایتا اینمعنی در فیل بصحت نه پیوسته بود - در زمان من چنین واقع شد که شبی سگ دیوانه بجائی بستن یکی از فیلان خاصه گنجینی نام در آمده در پای ماده فیلی که همراه فیل خاصه بود میگزد - یکبار ماده فیل بفریاد در می آید - فیلبانان دویده خود را میرسانند - آن سگ رو بگریز نهاده بزقوم زاری که دران حوالی واقع بود در می آید و بعد از زمانی باز در آمده خود را بفیل خاصه می رساند و دست او را میگزدد فیل او را میکشد - چون مدت یکماه و پنج روز ازینمقدمه میگزرد و روز یکه هوای ابر ناک بود غریدن رعد بگوش ماده فیل که در عین چرا بود می رسد و بیکبار فریاد میکند و اعضای

او بارزه در آمده خود را می اندازد و باز برخاسته هفت روز آب از دهان او میرفت - و ناگاه فریادی میکند و بی آرامی داشت فیلبانان هر چه در صدد علاج شدند نفع نه کرد - روز هشتم افتاده مرد -

بعد از مردن ماده فیل بیکماه فیل کلان را بکنار آب بصحرا می برند بهمان طریق ابر و رعد ظاهر شد - فیل مذکور در عین مستی یکبار بلرزه در آمده بر زمین نشست - فیلبانان او را به هزار مشقت به جا و مقام خود آورده - بعد از همان مدت و بهمان حالت که ماده را دست داده بود این فیل نیز تصدق شد -

جا ی حیرتست که جانوری باین کلانی و بزرگی هیکل و ترکیب باندک جراحتی که از حیوان ضعیفی باو رسد این مقدار متاثر گردد - (تزک ص ۱۱۸-۱۱۹)

PART VI

ASTRONOMICAL DATA

ECLIPSE

LUNAR (1610 A.D.)

On Saturday 13th (*Shawwal*, A.H. 1018-Jan. 9, 1610 A.D.) four hours before sunset eclipsing of the moon began. Degree by degree the whole of its body disappeared, and remained so for four hours of the night.

روز شنبه سیزدهم (شوال سنه ۱۰۱۸ه مطابق ۹ جنوری سنه ۱۶۱۰ء) چهار گهڑی از روز مانده ماه آغاز گرفتن نمود - مرتبه بمرتبه تمامی جرمی او منخسف گشت و تا پنج گهڑی شب گرفته بود - (تزک ص ۷۶ - ۷۷)

SOLAR (1611 A.D.)

On the 23rd (*Ramazan*, A.H. 1019-Dec. 9, 1611 A.D.) solar eclipse took place.

بتاریخ ۲۳ (رمضان سنه ۱۰۱۹ه مطابق دسمبر ۹ سنه ۱۶۱۱ء) کسوف واقع شد (تزک ص ۸۸)

SOLAR (1614 A.D.)

On Sunday 9th (*Safar*, A.H. 1023-Monday Apr. 19, 1614 A.D.) solar eclipse took place. Twelve hours of the day had elapsed when the eclipse began from the direction of the west, and four-fifth of the sun was hidden in the node. From the beginning of the eclipse upto the sun's reappearance, eight hours passed.

روز یکشنبه نهم (صفر سنه ۱۰۲۳ھ مطابق ۱۹ اپریل سنه ۱۶۱۴ء)
کسوف شد - دوازده گهڑی از روز مذکور گذشته از جانب مغرب
آغاز گرفتن کرد و از پنج حصه حضرت نیر اعظم در عقده ذنب
منکسف شد و از آغاز گرفتن تا روشن شدن هشت گهڑی
گذشت (تزک ص ۱۳۸)

COMET

On Saturday 18th (*Ziqad*, A.H. 1028-Oct. 26, 1618 A.D.) the camp was at Ramgarh. For some nights there had been appearing at three hours before sunrise, a (luminous) vapour and smoke of the shape of a pillar in the atmosphere. At each succeeding height it rose an hour earlier. On assuming full shape, it took the form of a spear, thin at the two ends and curved in the middle like a sickle. Its back was to the south and the face to the north. This time it showed itself a watch before sunrise. Astronomers and astrologers calculated its elevation by the astrolabe and ascertained that with parallax it extended over twenty four degrees. Its movement coincided with the motion of the Prime Mobile Firmament, so that it was first in the zodiacal sign Scorpio, then it entered Libra. Its declination was

mainly southerly. In their books the astrologers call such a phenomenon by the term of *Harbah*, the spear, and have written that its appearance portends weakness to the kings of Arabia and points to their enemies prevailing over them. God knows the truth.

Sixteen nights after the (first) occurrence of this phenomenon a comet showed itself in the same quarter. Its head was luminous but the tail that might be about two or three yards long had no light or glow at all. It has now appeared for eight nights. Whenever it disappears the fact will be recorded, as well as the influence of it."

Unfortunately, the fact has not been recorded.

روز شنبه هیزدهم حوالی رام گرد معسکر اقبال گشت - چند شب پیش ازین سه گهری بطلوع مانده بود در کره هوا ماده بخار و دخانی بشکل عمودی نمودار شد و هر شب یک گهری پیشتر از شب دیگر ظاهر میگشت و چون تمام نمود صورت حربه پیدا کرد هر دو سر باریک و میان کنده خمدار مانند دهره - پشت بجانب جنوب و روی بسوی شمال الحال یک پهر بطلوع مانده ظاهر میگردد منجمان و اختر شناسان قد و قامت او را باسطرلاب معلوم کردند که بست و چهار درجه فلکی را با اختلاف منظر سار است و بحرکت فلک اعظم متحرک و حرکت خاصه نیز در جهت حرکت فلک اعظم درو ظاهر می شود چنانچه اول در برج عقرب بود آنرا گذاشته بمیزان رسید و حرکت عرض در جهت جنوب بیشتر دارد دانایان فن نجوم در کتب این قسم را حربه نامیده اند و نوشته اند که ظهور این دلالت میکند بر ضعف ملوک عرب و استیلاء دشمنان ملوک عرب بر ایشان و العلم عندالله تا تاریخ مذکور بعد از شانزده شب که علامت ظاهر شده بود در همان سمت ستاره نمودار گشت که سرش روشنی داشت و تادو سه گز دم او دراز میغمود و اما در دم اصلا روشنی و



PLATE XXVI SPIKE OF *NERIUM* WITH RED POPPY by Mansur
Hermitage, Leningrad, through the courtesy of Institute of Peoples of Asia, Leningrad.

درخشندگی نمود الحال قریب هشت شب است که نمودار شده
هر گاه که منتفی گردد مرقوم خواهد نمود و از آثار و آنچه
بظهور رسد نوشته خواهد شد - (تزک ص ۲۵۰)

METEORITE

On the morning of *Farwardin* 30 (*circa* April 10, 1621 A.D.) a terrible noise was heard from the East in a certain village of the parganah of Jullundhar . . . . Amidst this noise a light fell from above, on the ground. People thought that fire was raining from heaven. A little while later when the noise (of the people) subsided and their hearts recovered from fright and bewilderment, they sent a fast runner to the Collector of that parganah named Mohammad Said and informed him of the occurrence. Immediately he rode there and personally visited the spot. About ten or twelve yards of land in length and breadth was scorched up in a fashion that no trace of grass or green was left. The effect of heat and burning could still be felt. He ordered them to dig the soil. The more they dug the greater the heat appeared to be, till they came upon a piece of heated iron. It was so hot as if it had been dug out from the sphere of fire. It took a long time to cool down. He brought it back with him to his residence, put it in a bag, sealed it and sent it to me. I ordered them to weigh it in my presence. It came to 150 tolah. I ordered Ustad Daud to make of it a sword, a dagger and a knife and to show them to me. He represented that it did not stand the blow of the hammer and fell to pieces. I ordered him in that case, to mix it with other iron and make use of it Accordingly he mixed three parts of the meteorite iron and one part of other iron and

having made two swords, one dagger and one knife brought them to me. The alloy had brought out its quality. Like true *Yamani* and *Junubi* swords it could be bent and became straight again. I ordered them to try it in my presence. It cut very well.

در سی ام فروردین ماه سنه حال در یکی از مواضع پرگنه جالندهر هر گام صبح از جانب مشرق غوغائی مهیب برخاست . . . در اثنای این شور و شغب روشنی از بالا بر زمین افتاده و مردم را مظنه آن شد که مگر از آسمان آتش میبارد - بعد از لحظه که آن شورش تسکین یافت و دلهای آشفته از سراسیمگی و هول باز آمد قاصد تیز رو نزد محمد سعید عامل پرگنهٔ مذکور فرستاده ازین سانحه اعلام نمودند - او در لحظه سوار شده خود را بمقصد می رساند و بر سر آن قطعه زمین رفته بنظر در می آرد - مقدار ده دوازده گز زمین در عرض و طول بنوعی سوخته بود که اثری از سبزه و گیاه نماند - هنوز اثر حرارت و تفسید گی داشت - فرمود که آنقدر زمین را بکنند - هر چند بیشتر میکنند بد تر حرارت و تپش بیشتر ظاهر میگشت تابجای رسید که پارچه آهن تفته نمودار شد بمرتبه گرم بود که گویا از کرهٔ آتش بر آورده‌اند بعد از زمانی سرد شد و آن را برگرفته بمنزل خود آورده در خریطه نهاده و مهر کرده بدروگاه فرستاد - فرمودم که در حضور وزن کنند یکصد و شصت تولہ بر آمد - باستاد داؤد حکم کردم که شمشیری و خنجری و کاردی ترتیب داده بنظر درآورد - عرض کرد که در زیر پتک نمی ایستد و از هم میریزد - فرمودم که درین صورت با آهن دیگر ممزوج ساخته بعمل آورد چنانچه فرموده بود سه حصه آهن برق و یک حصه دیگر آمیخته دو قبضه شمشیر و یک قبضه کارد و یک قبضه خنجر ساخته بنظر آورد از آمیزش آهن دیگر جوهر بر آورده بود - بدستور شمشیر یمانی و جلوهٔ اصیل خم میشد - و اثر خم نمی ماند فرمودم که در حضور آزمودند بغایت خوب برید - (توزک ص ۳۲۹)