تربیت فرمودن فرزندان

کیهان‌خدیو دادگر از دوربینی انداز
افزایش‌را سرسبز و شاداب دارد و
یکی‌را فراخور آن بهنگام مناسب بر
ناگزیر ساقی بزم سلطنت است که
شناخته بادهٔ مردآزمای دنیارا درخ
فروغ دیده‌وری این کار شگرف‌را بگز
روزگار بوقلمون گروهی‌را بتدریج پای
برخی‌را سزاوار بزرگی یافته یکبارگی بر
و چون درین ایام که عنفوان ابتد
ناصیهٔ احوال فرزندان سعادتمنش ل
ضمیر آسمان‌پویند پرتو ظهور انداخ
یکی‌را بمنصب بزرگ اختصاص بخشی
دوازده هزار قرار یافت و آن یکه‌تازان
گویند و سپاه نوئینان والاشکوه و امرا
پایهٔ سترگ شاهزادهٔ خردپژوه اخلاص
شد، و بر زبان گوهرآمود گذشت که «
و هشیاردلی و بردباری تمامی جنود
وابستگی دارد.» و شاهزادهٔ عقیدت‌گزی
هفت‌هزاری بلندی‌گرای شد و شاهزاد
دانیال برتبهٔ سترگ شش‌هزاری شرف
بستانسرای دولت نگارین گشت، چار

THE FELICITOUS, EXALTED PRINCES ARE PATRONIZED

The just world lord comprehends with farsightedness the merits 325
of all classes of people and keeps the garden of the world green and lush. By assessing the essential worth of people he promotes each one according to his merits and at the appropriate time. As it is necessary for the cupbearer of the banquet of rule to assess the capabilities of the people of the world and measure out to them the wine of the world accordingly, the ruler of the age performs this task in the best manner through his splendid insight. By the mysterious workings of the temperament of the chameleon world he elevates one group gradually, and, finding another group worthy of greatness, he promotes them to the heights of power all at once.

During these days, which was the time of the early spring of fortune, the emperor discerned in his sons rays of awareness and godliness. Disregarding their youth, he singled out each one for a high position. The most elite cavaliers held the rank of twelve thousand, and they were freelances on the field of military might who were called *ahadis* at the time; and the soldiers of great lords and exalted amirs did not rise above the rank of five thousand. Prince Sultan Salim's rank was set at ten thousand. "In view of his filial obedience, good character, intelligence, and forbearance, the totality of the heaven-assisted hosts is bound to that sapling of fortune," the emperor said. Prince Sultan Murad was given the rank of seven thousand, and Prince Sultan Danyal was assigned the rank of six thousand. By such graciousness the garden of the state flourished, the world prospered, custom rose to the level of worship through right

از نیکسگالی و کارشناسی عادت پایهٔ عباد
درون‌پیرائی آورد (نظم)

ز تو نقش بست این کهن طاق‌را عما
چو معمور شد ملک و دولت درست بمعم

اگرچه شهریار هشیارخرام منزل بمنزل
همگی همت در صید دلها مصروف دارد و
زمان سرچشمهٔ آگاهی می‌تراود. کردارهای
بر دیباچهٔ روزگار پیرایهٔ ظهور میگیرد. د
بعرض اقدس رسید که خرابی کول سرمایهٔ
مهربانی بآن سرزمین ورود فیض فرمودن
والا آن‌را بامرا قسمت نمودند و در کاوش
(نظم)

درخشنده حوضی چو لوحِ ضمیر چ
زلالش بروشندلی چون بصر ب

و از سوانح فرستادن جوقی از بهادر
ایستادگان پایهٔ سریر اعلی عرضداشت شه
که او در انتظام لختی از ثغور خواهان
است. بنابران شیخ ابراهیم فتحپوری
رخصت دادند که در حدود لاولالی رخ

thinking and competence, and outward conduct was tempered by inner correctness.

For your sake was this ancient arch decorated and the horizons were made to flourish.
When the kingdom prospered and the state was made right, he girded his loins to make hearts flourish.

Although the monarch proceeds from station to station while hunting, his mind is focused all the while on capturing hearts, the servitude of all souls occasionally bubbles forth from the wellspring of awareness, and appropriate behavior constantly appears marvelously in the forecourt of the age. At the station of Bamri, a dependency of Merta, it was reported that the ruined state of the reservoir had resulted in the devastation of the area. In all kindness the emperor went there. By imperial order administrators divided the labor up among the amirs and with one day's digging, irrigation was restored.

A pool shining like the tablet of the mind, reflective like the mirror of reason.
Limpid waters as clear as insight; in every drop was the essence of a hundred pearls.

A detachment of warriors is sent to Ajmer

When those who stand at the foot of the throne read out Shahbaz Khan's report and it became clear that he was in need of a group of competent men to put some of the borderlands in order, Shaikh Ibrahim of Fatehpur was sent with a group of warriors to take up residence in Laolali and reduce the refractory of the area

سرزمین‌را رهگرای فرمانپذیری سازـ
افشرده در بنیادافکنی رانا تکاپوی ش

نهضت فرمودن شهریا

چون مهمات این ناحیت حسن
تصمیم یافت که موکب همایون یو
پراکندگیهای آن صوب نیز انتظام
بمسرّت روزافزون گرایند. نهم آبا
قصبهٔ ماهروت سایه‌آرای معدلت
منزل نرایناداس برادر روپسی‌را بف
سپاسگذاری و نیایشگری چهره‌افرو
ماه رایات اقبال بحدود آنبیر نزول
الملک پیشکشهای گزیده بنظر مق
مبارک در بدمستی و عربده‌ناکی فتن
از سواری آن بعجز گرائیدی. چون
الهی به تیزدستی بر فراز آن شد
گردانید. نظارگیان بارگاه دولت‌را
بود که از صولت و صلابت شاهنش
شکوه والا همّتی تسخیر عالم ملک
ازو چه شگفت؟ و بزرگ نیروئی ک
فرمانپذیر دارد ازو زبون ساختن چ

to obedience. With Shahbaz Khan's assistance they were also to lay the foundations of the overthrow of the Rana.

THE INSIGHTFUL MONARCH SETS FORTH FOR THE PUNJAB

When affairs in the region had received due attention, it was 326
decided that the imperial train would go on an expedition to the Punjab in order to hunt, to put that region in order, and to delight the inhabitants with the splendor of the emperor's appreciation. On the ninth of Aban [October 21], the imperial tents were pitched in the vicinity of Mahrot. In accordance with his customary desire to honor his nobles, the emperor graced the abode of Narayan Das, the brother of Rupsi, with his presence.

On the twenty-seventh of the month [November 8], the imperial banners stopped in the vicinity of Amber. That day Qutbulmulk's emissaries presented tribute for the emperor's inspection. Included was the elephant Fath-i-Mubarak, which was unequaled for its ferocity and bad temper. Even the most expert handlers could scarcely ride it. When it was presented to the emperor he mounted it nimbly and brought it under control. The courtiers who were watching were amazed, and the emissaries almost gave up the ghost at the sight of imperial might and majesty. Why should it be strange for a person of such exalted fortune, who conquers this world and the spiritual kingdom with his high-mindedness, to perform such feats? Why should it be thought unlikely that a person of such great strength, who renders obedient thousands of charms with the power of his mind, should tame such wild beasts?

و از سوانح رهنمائی راجه تودرمل است
و دیانت‌گزینی از یکتایان زمانه است
تعصّب‌اندوزی سرآمد جهانیان. آئین
بطرز خاص نکردی و هزاران لابه پیش
و بخوردن و آشامیدن تن درندادی.
صنمهای آن ساده‌لوح گم شد. از آن د
و آشام گرفت. فرهنگ‌آرای اورنگ‌نشین
بخشوده گرانبار اندرزهای سعادت گ
شده روی در کردار آورد.

و از سوانح اساس نهادن قلعهٔ مول
جهان‌آرای حقیقت‌بین بمعموری گل
همواره در تعمیر این دو عبادتگاه عالی
که قصبهٔ آنبیر از ورود موکب مقدس
رسید که در آن سرزمین شهریست با
آن شیوازبانی میکند. رای صلاح‌اندیش
بیست و نهم آن ماه در خجسته ساع
نهادند و برخی از امرا بانجام این نامزد
گرفت و بمنوهرداس پسر رای لونکرن
شاهنشاهی اختصاص دارد منسوب گ
و از سوانح پدید آمدن ذوذنب اس
عالم بکرسی مغرب‌زمین. حقیقت ای
سخن نگاشته میشود. چون پرتو آفتا
فروغ آن نیّر والا گرمی پذیرد و برخی ا

2

Raja Todar Mal is guided 327

Raja Todar Mal stood out in his time for competence and honesty, and he was also the leader of the age in his love of convention and his fanaticism. It was his custom to do nothing—not even eating or drinking—without practicing his idolatry in his own manner and babbling before an idol. Once, during the confusion of breaking and pitching camp, his idols got lost. In his distress he stopped sleeping and drinking. Forgiving him for being so sunk in tradition, the wise monarch consoled him. The raja accepted a bit of the emperor's advice and put it into practice.

The founding of Mul-Manoharnagar

Since the emperor is as fond of improving the earth as he is of winning hearts, he constantly strives to improve the two great arenas of worship, the world of involvement and the world of isolation. At this point, when the imperial train was in Amber, it reached the emperor's hearing that in the area was an ancient city, of which nothing remained but a mound of earth. It occurred to him that it could be rebuilt. At an auspicious hour on the twenty-ninth of the month [November 10] the foundations were laid by the emperor's own hand, and several amirs were assigned to the task. It was completed in a short time and was named Mul-Manoharnagar after Manohar Das, the son of Rai Lonkaran, the zamindar of the area who enjoyed the emperor's favor.

A comet appears after the sun sets in the west 328

The reason for this heavenly spectacle will be given in order to fill out our story. When the rays of the world-illuminating sun fall on damp earth, the earth is heated by the sun's warmth and some particles of water become lighter and rise. As they mingle

نهد و باجزای هوائی آمیزش گرفته ببلندی گراید، و این آم
گویند. و چون زمین خشک تابشگاه آن فروغ‌آرای عالم
از مکامن آن بیبوست پیوندد و بتأثیر حرارت ذرّات خا
سبکی افزوده آید و با هوا آمیخته روی بفراز نهد، و
«دخان» نامند. هر یکی بر دو گونه بود: یکی درون زمین
چشمه‌ها و کانها و زلزله‌ها ازو فروغ ظهور بخشد. دیگ
چهره‌گشای گشته خرامش صعودی کند. از آن ابر و باران
و برق و چنین صورتها پدید آید. نامه‌های حکمت طبی
عبرتبخش‌را بروشن بیانی گذارش نماید. اکنون لختی از
بدیع نوشته بستانسرای آگهی‌را شاداب میگرداند. بر نی
پوشیده نماند که هرگاه مرّیخ بر آن ناحیت استیلا یاب
خشک گرداند و ابخره و ادخنهٔ غلیظ بسیار برخیزد، خ
سال یا فصل مریخ در عاشر بود و آن برج بادی یا آتشی
و قمر یا عطارد بادی باشد تا بنظر دوستی در ایشان
کشت‌ها روی در خرابی آورد و سرمایهٔ قحط پدید آید. بی
و نیز قوّت غضبی نیرو گیرد و سررشتهٔ خردپژوهی گسیخ
القصه، چون بخار لزج چربناک از نشستگاه زمین بنخ
که بآتش آمیخته است پیوندد لطافت درگیرد چنانچه
از پیوستنِ شمعِ افروخته افروزش یابد. آن‌را «شهاب
بزمین فرود آمدن گیرد عامه پندارند که ستاره روی در ف
لطف آن پایه ندارد بجهت کثافت مشتعل نشود، لیکر
اختلاف هوا پیکرهای گوناگون نماید چنانچه شخص گ
دم یا نیزه بدست یا بجانوری ماند که شاخها داشته

with particles of air and rise farther, the mixture is called "vapor." When dry earth receives the sun's rays, the dampness in the earth is dried out, and through the influence of heat, particles of earth increase in lightness, are mingled with the air, and rise. That mixture is called "smoke." Both vapor and smoke are of two sorts. One remains inside the earth and causes springs, mines, and earthquakes. The other comes to the surface of the earth and ascends. From it come clouds, rain, hail, thunder, lightning, and such things. Books on natural philosophy explain these phenomena clearly. Now let us expound on the appearance of the rare phenomenon of the comet. It should be known that when Mars dominates a region it dries it out, and much heavy vapor and smoke arises, particularly if Mars is ten houses away from the ascendant of the year or the season and that house is airy or fiery and inauspicious, and if the moon or Mercury is airy so that Mars will look with a friendly gaze upon them. Certainly crops will wither and signs of famine will appear. Illnesses will appear, irascibility will increase, and the thread of wisdom will be lost.

When heavy, oily vapor from the earth reaches the first layer 329
of the atmosphere, which is mixed with fire, it takes on a subtle quality, just as an extinguished lamp rekindles when smoke rising from it is touched with a flame. That is called a "meteor." As it descends toward the earth people think a star is falling. If it does not have sufficient subtlety it will not flame up on account of its grossness, but it will smolder and, according to differences in the atmosphere, various forms will appear, such as a person with tresses or a tail, or someone holding a lance, or an animal with horns, etc. Depending on differences in its quality, it lasts a long or short time. Sometimes dreadful red and black signs appear in it, and thick red signs are more terrible. If it is thicker,

و بواسطهٔ تفاوت پایه زود زوال و دیربقا بود. گاه نشانـ
هولناک درو نمودار گردد و در غلیظ علامات سرخ ب
غلیظتر بود نشانهای سیاه هول بخشد و این صوررا بزب
نجوم» و «ذوات الأذواب» نامند. و هر یکرا بمناسبت
جداگانه بود چنانچه گیسودارا «ذوذوابه» گویند و دُم
در کتب هندی از صد متجاوز شمرده‌اند و در نامه‌های
داشته، همه‌را بر طبیعت زحل و مریخ انگارند. ذوذ
نحس‌تر دانند. بطلمیوس گوید که در میان ذوذوابه
برج فاصله باشد، و برخی از یونانیان بر آنند که ذوذ
هنگام طلوع صبح چهره افروزد و ذوذنب از صوب م
ظهور کند. همانا از دید تکرار چنین توهّم نموده باشن
هندوستان آن‌را دو قسم ساخته بر سعادت و نحوس
درین سخن زبان یکتائی دارند که آثار این بولایتی باز
الرّأس آن گذاره کند یا توطّن گزینان آن ملک اورا ببـ
آن برج که درو پیدائی بخشد. و به نیروی جنبش کرهٔ
و باندازهٔ درنگ نتایج آن بظهور آید. و نیرنگی آثار ا
پیشینیان بیشتر از آن است که گفته آید.

از آنجمله در سال ششصد و شصت و دو هجری
فروغ‌افزای عالم در اسد بود و در آن شب قریب یازد
زمین واقع شد. غریب‌تر آنکه باندازهٔ سر آدمی بزرگ
از فراز آن برمیخاست. ببلاد تبت و ترکستان و چین
و ماوراءالنهر و خراسان گذشت و هشتاد و پنج روز
همهٔ آن دیار شورشها پدید آمد. در ماوراءالنهر و خر

horrible black signs appear, and in the terms of the ancients they were called "star tresses" and "hairy." Each one has a different name according to its shape: the one with a tress is called a "hairy comet"; one with a tail is called a "tailed comet." In Indian books more than a hundred are enumerated; in Greek books there are seven types, and they are all given the attributes of Saturn and Mars, but hairy and tailed comets are even more inauspicious. Ptolemy says that between a hairy comet and the sun is the distance of eleven constellations. Some Greeks believe that hairy comets appear in the east at dawn and tailed comets appear in the west in the early evening. They must have come to this conclusion after numerous observations. The wise men of India have divided them into two categories according to whether they are auspicious or inauspicious, and they are all agreed that the effects of these things are felt in the region through whose zenith they pass or in which the inhabitants see the phenomenon and in areas connected to the constellation in which they appear. The phenomena move with the motion of the sphere of fire, and their influences are felt to the extent that they pause. The mysterious workings of these phenomena that are recorded in ancient books are too numerous to be given.

Among observed comets was one that appeared in the Hegira year 662 [A.D. 1264] when the sun was in Leo. The night it appeared there was an eleven-digit solar eclipse on the other side of the world. Even stranger is that it looked like a man's head with smoke issuing from the top of it. It passed through the countries of Tibet, Turkistan, Cathay, Kashgar, Fergana, Transoxiana, and Khurasan, and it was visible for eighty-five days. There were disturbances in all these countries—witness the events connected with Qaidu and Baraq in Transoxiana and 330

و براق و غیر آن چهره‌گشای مقصود است چنانچه سال و
گذارش نماید.
و در هشتصد و سه ذوذنبی بر سمت الرّأس روم
عبدالله لسان و محیی الدین مغربی با سایر اخترشناسان
عرض صاحب‌قران رسانیدند که از گفته‌های دانش‌پژ
چنان دریافته میشود که لشکری از صوب مشرق بآن
نماید و فرمانروای آن ناحیت دستگیر گردد. آن چه
همواره اندیشهٔ یورش آن ملک داشت و همراهان ک
ندادی. توجه فرموده جوهر عزیمت خودرا و ژرف‌نگاه
خاطرنشین خرد و بزرگ گردانید.
و در سال هشتصد و سی و هفت هلالی در اوایل
اکلیل شمالی لمعهٔ بروز داد. طلوع و غروب با وی
چند برین سپری شد حرکت خاصهٔ او پدید آمد. ن
شمالی‌رویه دوری گزید و در هشت ماه راه کمون
در هرات و متعلقات آن عبرت‌افزای شد. هر روز
رخت هستی بربستی و میرزا ابراهیم والی فارس
ارغون شاه بدخشان و شیخ زین الدین خافی درین
و منازعتی که میرزا شاهرخ‌را با سکندر قرا یوسف ر
اوست.
و رازدانان آسمانی‌سیر بر آنند که اگر ظهور او
فرمانروای آن ملک یا نیابت‌گزین اورا روزگار بسر آ
بود اموال آن مرزبان از دست رود. و در ساقط اوت
افزاید و فرو شدن ناگهانی در عامه ظهور کند.

Khurasan as well as other things.[33] For a long time people reckoned dates from it.

In the year 803 [A.D. 1400] a comet appeared over the zenith of Asia Minor. Maulana Abdullah Lisan, Muhyiddin Maghribi, and other astronomers of the time reported to the Sahib-Qiran [Amir Temür] that it had been gathered from what experienced sages had said that an army from the east would achieve dominance over Asia Minor and the ruler of that region would be taken captive. Amir Temür, upon whom fortune always smiled, had been thinking of undertaking a campaign there, but his companions of limited vision had refused to give their consent, but then he revealed his determination and the astrologers' prediction to everyone. 331

In the year 803 [A.D. 1433–34] around the beginning of Libra a comet appeared near the Corona Borealis and rose and set with it. After a few days it acquired its own proper motion, and it circled, looking like a man holding a lance toward the Corona Borealis. After eight months it began to disappear. A huge pestilence erupted in Herat and its environs. Every day more than a thousand persons died, and Mirza Ibrahim the governor of Fars, Mirza Baysunghur, Arghunshah of Badakhshan, and Shaikh Zainuddin Khafi were lost during the commotion.[34] The contention between Mirza Shahrukh and Sikandar Qara Yusuf was also a result of the comet's influence.

Astronomers are agreed that if a comet appears at a felicitous right angle, the days of the ruler of the region over which it appears, or those of his deputy, will end. If it appears at a declining angle, the wealth of the ruler of the area will be lost. At a falling angle plague and pestilence will appear and unexpected death will spread among the general population.

هزاران شکر ایزدی که بمیامن ذات قدسی کیهان‌خد
از قلمرو برخاسته. اگر احیاناً چنین نمودار هولناک
سترگ بدین دیار نرسد و باوجود چنین حراست ایزدی
بزم آگهی بآئین مسلمان و برهمن خیرات فراوان فرمو
مردم کامیاب شادمانی گشتند.

و اجمال این موهبت کبری آنکه روز آراد بیست و پنج
هنگامی که نیّر اعظم در برج عقرب سعادت می‌افزو
این نشان آسمانی باخترویه مایل بشمال چهرهٔ تابش
دراز داشت چنانچه بحدّی رسید که در بعضی بلاد ت
اخترشناسان آگاهدل و رموزفهمان انجمن بالا چنین گ
در لختی از مساکن هندوستان غله گرانی پذیرد و از جا
دادند و فرمانروای ایران‌را روزگار سپری گردد و در عر
آشوب برخیزد. همچنانکه گفته بودند بی‌کم و کاس
همان نزدیکی قافلهٔ از ایران رسید. برخی از کاردانان د
همایون شرح گذشتن شاه طهماسپ و کشته شدن
بسلطنت رسیدن شاه اسمعیل بعرض اقدس رسانیدند

و اختصار این تفصیل آنکه شاه رضوان‌قباب پنج
سال پیش در قزوین رخت هستی بربست و سلطان‌
بسعی برخی از بزرگان آن سرزمین سلطنت‌را مخصوص
مقام جمعیت شد و بسعی پری خانم خواهر نامهربان
گشت. و اسمعیل میرزارا که فرزند دومین بود و مدّت
در قلعهٔ قهقهه محبوس، برآورده بداوری نشاندند
برادران و بنی اعمام‌را بفرامشخانهٔ نیستی فرستاد

Thank God that through the blessedness of the emperor's person the inauspicious influences of the comet were not felt in the realm. Even if such terrible phenomena appear occasionally, no great harm comes to this region. The divine protection of the emperor notwithstanding, much charity was distributed after the manner of Muslims and Brahmans, and great numbers of people were relieved of want.

A summary account of this great gift is as follows. On Arad day, the twenty-fifth of Aban [November 6], while the sun was in Scorpio, the heavenly phenomenon appeared in the north-east in the constellation Sagittarius. It had a long tail and was visible in some places for five months. Astronomers reported that in some parts of India the price of grain would rise, and they pointed out particular places. They also said the ruler of Iran would die and there would be disturbances in Persia and Khurasan. It came about exactly as they had predicted. Not long thereafter a caravan came from Iran, and some truthful persons reported to court that Shah Tahmasp had passed away, Sultan Haidar had been killed, and Shah Isma'il had become the ruler. A short account follows. 332

Events in Iran after the death of Shah Tahmasp

The shah died on the fifth of Khurdad the year before [May 14, 1576] in Qazwin, and his third son, Sultan Haidar, thinking the rule should be his, was consolidating his position with the help of some of the nobles, but he was killed through the machinations of his unloving sister Pari Khanum; and Isma'il Mirza, the second son, who had been imprisoned in the Qahqaha fortress for twenty-two years, was elevated to the throne. He cold-bloodedly dispatched most of his brothers and cousins to 333

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A MAHOMEDAN VIEW OF COMETS. THE VIEW OF THE ANCIENT IRÂNIANS (PISHINIGÂNS.)[1]

I

Introduction.

We are on the eve of seeing Halley's comet this year or early next year. Some observers have already seen it with their powerful telescopes. The Directors of the Heidelberg and the Cambridge Observatories have already seen it. The Director of the latter Observatory has announced that its appearance is like that of a star of the 14th or 15th magnitude. At this juncture, I hope that an account of the comets given by some Mahomedan historians will be found interesting, I think that a part of account will be of some interest even to scientific men because, if I do not mistake, the account of the comets by Abûl Fazl, which will form the principal part of my paper will be presented for the first time before the students of cometography. I propose dealing with the following matter in this paper :

1. Theversion of some Mahomedan historians about comets ;

2. The identification of the comets seen or described by them ;

3. An inquiry into the views of Mahomedan writers on comets.

List of the Mahomedan authors referred to in the paper.

The Mahomedan authors whose versions I propose giving, or whom I am going to refer in this paper are the following :

1. Maçoudi, who lived at the end of the third century and in the first half of the fourth century. There is only one reference to a comet in his *Murûdj adh-Dhahab* (Prairies of gold).

2. Abûl Fazl, the celebrated Prime Minister of king Akbar of India. He describes in his *Akbar-nâmeh* a comet that he had seen in the 22nd year of the reign of Akbar (985 Hijri, 1577-78 A.D). Before describing this comet, he writes as it were, a long introduction giving not only his view of the phenomenon of the appearance of a comet, but the view of the learned of his time. While doing so, he refers to Greek, Roman, Egyptian and Hindu writers on the subject also. Having given his introduction, he describes three comets that had appeared before his time. Of course, this must be on the authority of some previous writers whom he does not name. This account of the comets will, I hope, interest some scientific men. As far as I know that portion of the Akbar-nâmeh which gives this

[1] This paper had, at first, appeared in an issue of the "Revue du Monde Musulman" (10 Année No. 1) The Editor spoke of the paper as containing "curieuses et erudites recherches sur un point mal connu de l'histoire et de la science musulmanes."

long account of the comets is not hitherto translated into any other language. I give my own translation in which I have followed the text edited for the Asiatic Society of Bengal by Maulawi Abd-ur-Rahim.

3. Ahmad-bin Mahmad's *Nigâristan* written in 1552 A.D.
4. Nizâm-ud-din the author of the *Tabakât-i-Akbarî*.
5. Badaoni, the author of the Muntakhab-al-Tawârîkh.
6. Jahângir's *Waka'ât-i-Jahângiri*.
7. Mutamad khân's *Ikbâl-nâmeh-i-Jahângiri*.

I will now give the version of the Mahomedan historians I have named above. I will give the versions of four in the words of their translators. The rest I have translated from the original.

I will give at first Abûl Fazl's version about the comets as it is the largest and fullest. As said above, I give my own translation of his version in the Akbar-nâmeh: [1]

II.

Abul Fazl's version of the comets of 1264, 1400, 1401, 1433, and 1577 in his Abkar-Nameh.

"In the matter of the appearance of a tailed comet which appeared after sunset (*lit.* after the time of the sitting of the great luminary which bestows favours upon the world—on the chair of the crust of the Earth).

"A Preface is written for a complete comprehension of the description of the symbol of the Heavens.

"When the rays of the world-illuminating sun fall on the moist earth, it is heated by the lustre of that exhalted luminary, and some of the particles of water, becoming lighter, rise upwards, and mixing with particles of air take an upward direction. This mixture is called "vapour" (bokhâr).

"When the parched earth becomes the seat of the heat of the illuminator of the world (*i.e.* when it is heated by the sun), the essence of moisture from its embuscade is attached to dryness. Then by the influence of the heat, particles of earth being heated become lighter and after mixing themselves with air fly above and that inter-mixture is called steam (dakhân).

Each of these is of two kinds. One is confined to the Earth, and springs, streamlets and streams come into appearance,[2]

[1] Maulawi Abd-ur-Rahim's Text for The *Asiatic Society of Bengal* vol. III, pp. 221 224.

[2] This refers to the action of what Abûl Fazl calls *dakhân* or *steam* Here he explains, not in a clear or distinct way, how streams and springs are formed. Modern science also attributes to the formation of steam the rise of springs, etc.. Prof. Anstead's following description elucidates what Abûl Fazl says :

"The second, appearing on the surface, rises up pompously. From this are formed clouds, rain, hail, thunder, lightning and such other phenomena. Books of natural science give explanatory accounts of these very clearly.

"Now, let a little of the manifestation of that wonderful image (*viz.* the comet) be written for the pleasure of the gardenground of information (*i.e.* I will now write something about the phenomenon of a comet for the information of my readers.)

"It is not concealed from (*i.e.* it is known to) the writers of wisdom, that every time Mars attains ascendancy over the tract of a country, it makes the land of the country dry, and foul vapour and steam arise in large quantities, especially, in the commencement of the year or the season, when Mars is in the 10th and when the unhappy constellation may be that of *bâdî* (*i.e.* that of Gemini, Aquarius and Libra) and of *atashî* (*i.e.* of Aries, Leo and Sagittarius) and when the Moon or Mercury is in the *bâdî* (*i.e.* in Gemini, Aquarius and Libra) so that it looks towards them with an eye of amity. Anyhow, fields are then devastated and the beginning of a famine is in sight; sickness is prevalent; calamities gain strength, and the thread of the pursuit of knowledge is broken.

"In short, when the tenacious thick vapour (rising) from its seat, attaches itself to the first layers of atmosphere which are heated, it acquires a pleasant look (*i.e.* is illuminated), just as the lamp-black of a lamp becomes illumined from its contact with a lighted candle. It is then called *shahâb* (*i.e.* meteor). When it begins coming down to the earth, common people think that it is a star that is coming down. If that does not happen on account of its connection, it is not illuminated, but burns and, profiting by the different kinds of weather, assumes different forms, like those of a man with locks of hair, a person having a tail, a person holding a lance in his hand, an animal with horns

"Of the water that falls on the earth as rain, we have seen that a certain part runs off the surface by rivers into the sea, or is evaporated back again into the atmosphere within a very short time. The remaining part disappears. It passes into the earth's crust, being absorbed into the soil and surface-rocks, or entering the innumerable crevicies and fissures that exist in all rocks near the surface. Making its way through permeable rocks, such as sand, or passing into natural reservoirs or along some underground channel, it circulates through the earth for a time, longer or shorter according to circumstances, and comes at length once more to the surface. If it falls in a district greatly above the sea level, it may issue in springs at some lower part of the same country, or, by the pressure it exerts when the rocks are full, may force out other water that has already performed a long journey. If it falls near the sea, it may still be brought back into circulation, for we know that the temperature of the interior of the earth is higher than at the surface: and it is quite possible that a little water, penetrating the depths at which it would be converted into steam, may exercise a pressure sufficient to overcome the force of gravity and help to force up large columns of water from great depths, which may either rise through fissures at a high temperature in thermal springs, or, oozing upwards, may again become cooled before reaching the surface. It may and does re-appear in this way naturally and at ordinary temperatures. All water obtained or obtainable from the interior of the earth is called *spring water*; and all sources of water within the earth are called *springs*." (*Physical Geography*, by Prof. Anstead, 1871, p. 213).

or the like. Depending on the differences of its position, it fades soon, or lasts long. At times, dreadful red [1] or black forms appear in it. The red forms when thick add to the terror. When thicker, it is the black forms that cause terror. In the ancient language, such a form is named *sawâbi-i-najum* [2] *or Zawat'ul azwâb* [3]. Every one (of these forms) has a different name according to its feature. Thus the one with locks is called *Zuzavâbê* (*i.e.* the possessor of locks of hair) and the one with a tail is called Zuzanâb (*i.e.* the possessor of a tail).

"In Indian books, more than 100 (names) are recounted. In Greek books, 7 kinds are recognized and all are considered to be of the nature of Saturn or Mars. Those with locks of hair and those with tails are known to be more unlucky. Batlimus (Ptolemy) says that between the hairy comets and the sun, there is the difference of 11 constellations. Some Greeks are of opinion that the hairy comets appear towards the West in the early part of the evening. Certainly from the repeated sight (of such phenomena) such a supposition can be made.

"The wise men of India divide them into two kinds and take them to be auspicious and inauspicious (respectively). All are unanimous in saying this, that its (*i.e.* the comet's) influence is reflected upon the country over whose zenith it passes or whose best inhabitants see it. It moves according to the position of the constellation in which it appears and in accordance with the strength of the motion of the region of fire [4]. Its influences appear in proportion to (the time of) its stay, (*i.e.*) the longer it appears, the greater its influences as to good or bad luck to the country. In the writings of the ancients, nirangs (نیرنگ, incantations) for (counteracting) these influences are mentioned more than can be described.

"Out of all (these comets) one hairy comet appeared in the year 662 Hijrî[5]. The increaser of the splendour of the world (Farugh afzâ-i'âlam) was in the sign of Leo and had gone about 11 fingers[6] down the earth (*i.e.* had set) in the night. The stranger thing was that (*i.e.* the comet) appeared to be of the proportion of the head of a big man and emitted steam from its front. It passed (*i.e.* appeared) in the countries of Tibet, Turkestan, China, Kashghar, Farghana, Ma'wara'u'n-nahr

1 Cf. the descripton of the appearance of Halley's comet in 1835 by Mr. Heward: "It glowed like a red-hot coal of oblong form." It appeared like "a blazing rocket." (The Story of Halley's comet, in *The Nineteenth Century* of September 1909, p. 523).

2 *Lit.* "a keeper of the ward-robe of the stars."

3 *I. e.* "mistress of locks."

4 Compare with these the words, "The Chariot of Fire" applied to a comet by Mr. E. Vincent Heward in his "Story of Halley's Comet", *The Nineteenth Century* of September 1909, p. 512.

5 A. C. 1264.

6 A kind of measure.

(Transoxania) and Khorasan. It appeared for 85 days. In all these countries, there arose rebellions. In Transoxania and Khorassan calamities of thunder[1] and lightning and such others appeared.

"Many years and months had passed over this event and then in 803 [2], a tailed comet appeared in the zenith at Rûm (Constantinople). Maulâna Abdallalasan and Mahiad-din Maghrabi with other astrologers of that time informed Timur, that, it appears from what the wise and the experienced have said, that an army (coming) from the direction of the East will be victorious in that country and a general from that country will assist (him). Timur (*lit.* that illuminator of the face of fortune), who was always expecting an invasion of the country, but whose companions of poor intelligence did not acquiesce, attended to that (prediction) and convinced the great and the small (of his court) of the truth (*lit.* gem) of his resolution and of the insight of the star-seers.

"In the year 837 [3], on the occasion of a new moon in the first part of Libra, a tailed comet appeared (*lit.* gave brilliancy to the day) near the 17th lunar mansion in the North. It rose and set with it. After the lapse of several days, its special motion appeared. From that 17th lunar mansion in the North, (a form like that of) a lance-holder separated (*lit.* assumed the face of separation), and in eight months, took the path of the Camel. A great pestilence spreading misery (round about) appeared in Herat and its dependencies. Every day more than a thousand persons died. Mirza Ibrâhim, the Governor of Fars and Mirza Bysangar Arghun, the king of Badakhshan, and Shaikh Zainud-din Khâfî died in this calamity. A fierce quarrel, which took place between Mirza Shâh-rokh and Sikandar Karâ-Yusef, was also in consequence of this (comet).

"The learned in the mysteries of the Heavens are convinced of this, that if it appears within the boundaries of a country, its king or his vicegerent dies. If it is inclined towards the boundary, the property (*i.e.* the country of the governor) passes away from his hands [4] and plague and diseases add afflictions to the sickness of the country. Sudden deaths occur among the common people.

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1 Taking the word to be ra'ad رعد. The Bengal Asiatic Society's text gives the word as kayâd (كايد) which is the last star in the tail of the Lesser Bear. It also means a governor. But these seem to have no proper meaning here. In the foot-note, it gives râyad (رايد) as found in another manuscript. I think it is mistaken for ra'ad (رعد) which suits well with the next word (براق) barâk, flashing.

2 A. D. 1401. 3 A. D. 1433.

4 Cf. the words of Louis le Debonnaire on seeing Halley's comet in 837 A.D. He said "A change of reign and the death of a prince are announced by this sign" (The story of Halley's comet, in *The Nineteenth Century* of September, 1909, p. 518).

"A thousand thanks to God, that owing to the benedictions of the holy soul of the King (Akbar), influences and misfortunes have disappeared from his dominions. If, in case, such a terrible sign (*i.e.* a comet) appears, a great calamity does not overtake this country. In spite of such divine protection, that intelligent person of the assembly of information (*i.e.* the intelligent well-informed king Akbar) ordered alms to be distributed on a large scale according to the customs of the Mahomedans and Brahmans and people of all places became cheerful. The most beautiful thing of this great liberality (*i.e.* the result of this alms-giving) was this: On the day Arad (Arshisang), the 25th of the Ilâhi month Abân, at the time when the sun made his conspicuous appearance in the sign Scorpio, this heavenly sign (*i.e* the tailed comet) kindled its brilliant face in the sign of Sagittarius, faced towards the West (and) inclined towards the North. It had a long tail. It had reached such a limit, that in many towns they saw it for five months. The well-informed astrologers, and those skilled in the mysteries belonging to the higher (*i.e.* celestial) assembly, explained it thus:

That among some of the inhabited parts Hindustan, there will be a scarcity of grain, and they specified some particular places. The time of the ruler of Irân will come to an end, and in Irak and Khorasan there will arise disturbances." All, that was said, came to pass without anything being less or diminished. A short time after, a caravan came from Iran. Some of its well-informed men of truthful mind informed His Majesty of the death of Shah Tahmasp and of the murder of Sultan Haidar and of the accession to the throne of Shah Ismail.

The purport of all this detailed account is this: The king of heavenly abode (*i.e.* king Tahmasp) died in Kazvin in the beginning of the Ilâhi month Khordâd) [1]."

III.

Version from other Mahomedan Works.

I will now give the version of the other Mahomedan writers in the order in which I have named them above.

Maçoudi's Murûdj udh-Dhahab.

Maçoudi, speaking of the events of the Hijri year 299 (911-12 A.C.), thus speaks of the appearance of a comet in that year:

"Une grêle énorme, composèe de grêlons pesant un *ritl*, poids de Bagdad, tombe sur Koufah en même temps qu'une bourrasque de sirocco, au mois de ramadan; plusieurs maisons et édi-

[1] Here follows an account, as to how king Tahmâsp died, and Sultân Haidar was murdered and Shâh Ismâil came to the throne.

fices sont renversés. Ce sinistre est suivi d'un tremblement de terre qui coûte la vie à un grand nombre d'habitants. Ces désastres eurent lieu á Koufah en 299.—La même année est signaleè par un tremblement de terre en Egypte et par l'apparition d' une cométe [1].

The Version of Ahmad bin Mahmad[2] in his Nagâristân about the comet of 941-942 A. D.

In the year 330 (Hijri)[3] there appeared a Comet whose tail appeared from the East to the West. It remained for eighteen days. From the influence of this inauspicious sign, one *jarib* [4] of wheat cost 320 golden-*miskâls*[5]. When one ear of corn was worth a beast of burden[6] the price of wheat rose so high. Men ate one another out of hunger. In the time of famine a plague appeared, so (virulent) that people had not the strength of burying the dead.

Nizam-ud-din's version of the comet of 1578, twenty-third year of the reign[7] (A. D. 1578-79).

"At this period, at the time of evening prayer, a comet appeared in the sky towards Arabia, inclining to the North, and continued very awful for two hours. The opinion of the Astrologers was that the effects would not be felt in Hindustân, but probably in Khorâsân and Irâk. Shortly afterwards, Shah Ismail, son of Shah Tahmasp Safavi departed this life, and great troubles arose in Persia"—[8].

I have given Elliot's translation, but have corrected it in one place. The first part of the passage, as given by Nizâm-ud-din, runs thus: ذکر ظاہر شدن دور دانر درین ایام در وقت نماز شام در طرف عرب مائل بشعال دور دانر روی (9) آسان ظاہر شد

Elliot seems to be wrong in translating the word "dar tarf-i Arab" by "towards the East". The word "Arab" does not mean 'East'. It simply means 'Arabia'. So, the words should be

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1 MACOUDI, traduit par Barbier de Meynard, vol. VIII, p. 281-82.
2 In this translation, I have followed the text published in 1245 Hijri = 1829 A. D., at the instance of Captain George Jervis (کپتان جارج جرویس صاحب) p. 70, l. 16 et seq. *Vide* ELLIOT'S *History of India*, vol. II, appendix, p. 585.
3 *i. e.* 941-942 A. D.
4 Jarib is "a cron measure equal to four qafiz". Qafiz is a measure containing about 64 lbs. in weight" (Steingass)
5 "A weight of a dram and three-sevenths" (Steingass).
6 Parvin. It also means Pleiades.
7 The beginning of the 23rd year of Jahangir's reign corresponded with Tuesday, the 2nd Muharram 986 H. (11th March 1578).
8 Elliot's *History of India*, vol. V, p. 407.
9 Tabakât-i Akbari. *Munshi Naval Kishore's* lithographed edition of 1875 A.D. (1292 Hijri), p. 339, lls. 3-4.

translated "towards Arabia". Now, as Arabia is in the West, the words may be translated "towards the West." This translation will then tally with the statements of Badaoni and Abûl Fazl, who say that the comet appeared in the West (مغرب, maghreb).

There is one thing to be noticed in Nizâm-ud-dîn's writing. He uses the word "dur-daneh" (دور دانہ) for a comet. I do not find the word in the well-known *Persian-English dictionaries* of Richardson and Steingass nor in the *English-Persian dictionary* of Woolaston. The *Tabakât-i Akbari* alone uses it for "a comet." I think this word is an attempt to render into Persian "Gurcheher," the Pahlavi word for comet, which can also be read "dur cheher." We will speak of the Pahlavi word at some length later on.

Badaoni's version of the comet of 1578, as given in his Muntakhab-ut-Tawarîkh [1].

"Among the unexpected events (one) was this that in the same year a comet appeared from the direction of the west. When Shah Mansûr left a long tail from behind in the corner of his turban, they named him (in joke) 'a tailed comet'. The effects of this comet appeared in that country."

Badaoni, like Abûl Fazl, places the event in the 22nd year of king Akbar's reign, while Nizam-ud-din, as seen above, places it in the 23rd year. Elliot thus explains the discrepancy :

"The twenty-second year began on the 20th Zî-l hijja, 984 and being a solar year, it extended over the whole of Hijja 985, and ended on the 1st day of 986. The oversight of this fact has given rise to some confusion in the dates about this period, and the events here recorded as having occurred in the twenty-third year of the reign are placed by Abûl Fazl in the twenty-second [2]."

When identifying the comet of king Akbar's reign later on, we will see that it appeared in 1577, the 22nd year of Akbar's reign.

Jahângir's Wak'a'ât-i Jahângiri.

The version of the author of the Wakiât-i-Jahangiri about the two comets that appeared in 1618 in king Jahangir's reign runs thus: (ELLIOT'S *History of India*, vol., VI. p. 363).

"Saturday, 17th Zi-l ka'da[3] Several nights before this, a little before dawn, a luminous vapour, in the form of a column,

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[1] Lees and Ahmad Ali's *Text*, vol. II, p. 240, I. 16 ; p. 241, I. 5, I give my translation from this text. *Vide* Lowe's translation, vol. II, p. 248. *Vide* also *L'Empereur Akbar* par le Comte F. A. De Noer traduit de l'allemand par G. Bonet-Maury, vol. I, p. 262.

[2] Elliot's *History of India*, vol. V, p. 403, no. 1.

[3] The year was Hijri 1027, A.D. 1618. The date corresponds to 10th March 1618. *Vide* Elliot's *History of India*, Vol. VI, p. 356.

had made its appearance, and every succeeding night it arose half an hour earlier than on the preceding night. When it had attained its full development, it looked like a spear with the two ends thin, but thick about the middle. It was a little curved like a reaping-sickle, with its back towards the South, and its edge towards the North. On the date above-mentioned, it rose three hours before sunrise. The astronomers measured its size with their astrolabes, and, on an average of different observations, it was found to extend 24 degrees. Its course was in the empyrean heaven, but it had a proper motion of its own, independent of that firmament, as it was retrograde—first appearing in the sign of the Scorpio, then in that of the Scales. Its declination was southerly. Astrologers call such a phenomenon a spear, and have written that it portends evil to the chiefs of Arabia, and the establishment of an enemy's power over them, God only knows if this be true!

"Sixteen nights after its first appearance, a comet appeared in the same quarter, having a shining nucleus, with a tail in appearance about two or three yards long, but in the tail there was no light or splendour. Up to the present time, nearly eight years have elapsed since its first appearance, and when it disappears, I shall take care to record it, as well as the effects which have resulted from it."

From the above extract, perhaps one may be led to suppose that the comet continued to appear for eight years. We will explain this matter later on while identifying this comet.

Mutamadkhân's Ikbâl-nâmeh-i Jahângiri.

The version of Mutamadkhan, in his *Ikbâl Nâmeh-i Jahângiri*, about the first of the comets of 1618 runs thus, (ELLIOT'S: *History of India*, vol. VI, pp. 406-7):

"On the 16th of December, an hour and a quarter before the dawn of the day, there appeared in the atmosphere a vaporous matter in the shape of a column, and it was seen half an hour earlier every succeeding night. When it appeared in its full form, it resembled the shape of a javelin. It was thin at both ends, and thick and crooked in the middle like a sickle. Its back was towards the south, and its face towards the north. The astronomers measured its size by means of an astrolable, and upon a comparison of different observations, it was found to extend over 24 degrees. It moved with the highest of the heavens, but had a proper motion of its own; so that it first appeared in the sign of Scorpio, and in a short time left it, and entered that of Libra. It also had a southerly declination. Astrologers, in their books, mention such a phenomenon under the name of a javelin. Sixteen nights after its appearance, a star was seen in the

same direction, the head of which was luminous; but its tail, which was two or three yards long, emitted no light. It was in consequence of its appearance that a pestilential disorder (*wabâ o tâ'ûn*) spread throughout this extensive country of Hindûstân, which exceeded everything known and recorded in former ages, nor is there any mention made of such in the authentic works of the Hindûs. The pestilence arose in the country one year before the appearance of the phenomenon, and continued to rage for eight years. It was also through the effects of this phenomenon that a misunderstanding arose between His Majesty and the fortunate Prince Shâh Jahân. The disturbances which thus originated lasted seven or eight years. What blood was shed in the country! and what families were ruined!

"At this time it was learnt from the petition of Bahadur Khân, governor of Kandahâr, that in the environs and dependencies of the city, the mice had increased to such an extent that they left no trace of either crops or fruits. With the greatest difficulty, perhaps, only one-fourth of the produce was saved to the cultivators. In the same manner, the fields of melons, and the produce of orchards and vineyards were totally destroyed; and when no fruit and no corn remained in the gardens and in the fields, by degrees the mice all died off."

IV.

Identification of the Comets.

We will now proceed to identify the comets described by the above-named Mahomedan authors. Mr. J. Russel Hind's book on comets has been of great use to me in identifying them. The comet referred to by Nizâm-ud-din's Tabakât-i Akbari and by Badaoni's *Muntakhab-ut-Tawârîkh* is the same as that which is the fourth in the list of Abûl Fazl; so they do not require a separate identification. We will proceed in our work of identification in the chronological order of their appearance. The oldest comet referred to is the one mentioned by Maçoudi.

1. Maçou'di's comet of 912 A.D.

The comet of Hijrî 299 (911-912 A.D), referred to by Maçoudi, is Halley's comet in one of its previous revolutions. Mr. Russel Hind, in his book on Comets [1] gives a table of the most probable epochs of the perihelion passages of Halley's comet, commencing from 11 B.C. Therein we find its 13th appearance in 912 A.D. This date corresponds to Maçoudi's Hijrî date 299.

[1] *The Comets*, by J. Russel Hind, 1852, p. 57.

CHAPTER XL.

EXPEDITION OF H.M. TO THE PANJAB, THE APPEARANCE OF THE COMET, ETC.

When the affairs of this part of the country (Ajmere) had been properly disposed of, H.M. resolved to march to the Panjab, and while enjoying hunting to compose the distractions of that province. On 9 Ābān, Divine month, he encamped at Māhrōt.[1] From a desire to cherish the lowly he visited the dwelling of Narāyan Dās the
221 brother of Rūpsī. On the 27th he encamped at Amber,[2] and on the same day the ambassadors of Quṭb-al-mulk[3] produced choice presents. Among them was the elephant Fatḥ Mubārak, who was renowned for his violence so that professional drivers were afraid of mounting him. When he was brought before H.M., he quickly mounted him, and made him obedient. The spectators were amazed, and were almost ready to vacate their bodies on beholding the might and majesty of the sovereign. What is wonderful in his performing such marvels, or what extraordinary in his subduing such wild animals?

One of the occurrences was the guidance given to Rajah Todar Mal. Just as he was one of the unique of the age for practical wisdom, and trustworthiness, so was he at the head of mortals for superstition and bigotry. His rule was that until he had performed in a special manner his idols-worship, and had adored them after a thousand fashions, he would not attend to business nor eat or drink. Suddenly, in the turmoil of moving the camp, the idols of that simpleton were lost. In his heartfelt folly he abandoned sleep and food. H.M. had compassion on him and administered consolations to him. He recovered somewhat and addressed himself to his duties.

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[1] In Ajmere J. II. 273.

[2] The old capital of Jaipūr.

[3] The title of the Golconda Sultans. The Sultan here meant was Ibrāhīm Quṭb Shāh who died in 1581.

One of the occurrences was the laying the foundation of the fort of Mūl-Manahar-nagar. Inasmuch as H.M. is disposed to cultivate the soil (*gil*) as well as to civilize the soul (*dil*), he continually decks society and solitude by building up these two great places of worship. At this time, while he was at Amber, it came to his hearing that there was an old city in the neighbourhood, the ancient greatness of which was now recorded by a mound of earth. He resolved upon reviving it, and on 29 Ābān he, in an auspicious moment, laid with his august hands the foundation of that fortress. He nominated several officers to execute the work, and in a short time it was completed in an excellent manner. He associated it with Manahar[1] Dās, the son of Rai Lonkaran, the Zamīndār of the place, and gave it the name of Mūl-Manaharnagar.[1]

One of the occurrences was the appearance of a comet[2] after the sun had sate on the throne of the West.

Let there be a description of this phenomenon for the purpose of feeding the lakelet[3] of discourse!

When the rays of the world-warming sun fall upon moist 222
earth, heat is generated by that great luminary, and particles of the water become light and float upwards. They mix with the atmosphere and rise high. Such mixture is called vapour (*bukhār*). When the dry ground becomes heated by the sun, the supply of moisture which is hidden therein becomes united with the dryness, and from the influence of the heat the earthly particles get burnt

[1] He was a poet and wrote under the name of Tausanī (a mettled steed). He was also called Muhammad Manahar. See Badayūnī III. 201. For Manoharpūr, see I. G. XVII, 200. It is 28 m. N. N. E. Jaipūr. Tiefenthaler I. 323 mentions a town called Monoarpur 15 leagues N Jaipur, and calls it a "ville de marque" and says it had a fortress. See also B. 494, n. 2, Lowe 238, and Elliot V, 406, and Errata, vol. VIII. Perhaps it is the Manoharnagar of J. II. 277. There is a reference to Rai Manahar in Price's Jahāngīr 33, and in the Tūzuk, p. 8. See Rogers' translation, pp. 17 and 321.

[2] *Ẓū ṣanab*, lit. possessed of a tail. This is the comet of 1577 described by Cornelius Gemma who was a professor of medicine at Louvain, and published his book at Antwerp in 1578. He died of the plague in the following year. His engraving of the comet has been reproduced by Guillemin. It passed its perihelion on 26 October, 1577 (B.B.R. A.S.J. XXI, 146).

[3] The text has *dibāca*, preamble but the variant *dariyāca* is supported by the I.O. MSS.

and so their levity is increased. They then mix with the atmosphere and ascend. This mixture is called smoke (*dukhān*). Each is of two kinds. One becomes fixed in the ground and produces fountains, cavities (*kānhā*) and earthquakes. The other spreads over the surface of the earth and ascends. From it are produced clouds, rain, storms, thunder, lightning, and the like. Treatises on natural history describe these things clearly. I now proceed to refresh the garden of my discourse with an account of the production of those wonderful phenomena (comets).

Be it not concealed from the listeners to knowledge that whenever Mars is predominant in a country, the latter becomes arid, and thick vapours and smokes rise up in it. Especially is this so if Mars be in the tenth house of the horoscope of the year or season, and if that house be windy, or fiery and malific, and the moon, or Mercury, be windy, so that he (Mars) may regard them with a glance of affection.

Assuredly, the crops will then become bad, and there will be the elements of a famine. There will also be sicknesses, predominance of wrath, and the snapping of the thread of inquiry. (Wisdom-seeking).

In fine, when the viscous and hairy vapour first rises from the ground and joins the first stratum[1] of the atmosphere, viz. that which is mixed with fire, it assumes beauty, just as the smoke of an extinguished lamp becomes illuminated when approached by a lighted candle. It is then called a meteor (*shihāb*), also a shooting-star, and when it descends towards the earth, the vulgar think that a star is falling. If its beauty does not become so great, it, on account of grossness, does not flame, but still it is consumed. On account of the varieties of the atmosphere it assumes various forms. Thus it becomes hairy, or it acquires a tail, or it holds[2] a spear, or resembles a horned animal, etc.

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[1] It is stated in the Ain, J. III. 38, that Fire is the first elemental sphere, and that its convex adjoins the concave of the sphere of the moon.

[2] *Nesa badast*. Cf. J. III. 38, n. 8. The word used in the Ain is *niyāzik*, the pl. of *nesak*, a short spear or javelin, and J. translates this as the "Zodiacal light." But A. F. is there treating of the notions of the Greeks, not of the Hindus and it does not appear that the Greeks had observed the Zodiacal Light.

According to differences in its quality, it is either quickly consumed, or it lasts a long time. Occasionally terrible red or black appearances are observed in it. If it is dense, the red appearances excite dread, and if it become yet denser then black appearances inspire fear. Such forms were called in ancient language ġawābī[1]-i-najūm and ẕūāt al-aẕūāb.[2] Each one of them had a different name in accordance with its difference in form. For instance, they called the hairy one ẕū-ẕūāba and the tailed one ẕū-ẕanab. In Hindi (i.e. Indian) books they reckon the number of forms as more than one hundred.[3] In Greek treatises seven kinds are enumerated, and they are all regarded as of the natures of Saturn and Mars. The *ẕū-ẕūāba* (possessed of forelocks) and the *ẕū-ẕanab* (the tailed) are regarded as the most malefic. Ptolemy says that the ẕū-ẕūāba and the sun are eleven Signs apart. Some of the Greeks are of the opinion that the ẕū-ẕūāba show themselves in the morning towards the east, and that the ẕū-ẕanab appear at evening towards the west. Seemingly, this idea is the result of repeated observations. The sages of India have divided them into 223
two classes, according as they are benefic or malefic. All agree that their influence affects the country across whose zenith they pass, or where they are visible to the inhabitants, and that it depends on the

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Probably then all that A.F. means by *niyāzik* is spear-shaped comets. The next word, which Jarrett translates by luminous streams, is *umidha* أعمدة in the original, and this is the plural of paucity of عمود pillar. The next expression is ẕūāt al qarūn, lit. possessed of horns, but which J. renders "meteors." This corresponds to the *ke ṣāḥibhā dāshta bāshid*, "which possess horns," of A. N. III. 222, eight lines from foot. In a MS. of the Ain in my possession there is no conjunction between *umidha* and *ẕūāt-ulqarūn*, so that the phrase reads "horned pillars." There is an account of a comet in the Tūzuk Jahāngīrī 250, Elliot VI. 363.

[1] *Ġuwābei* is given in Meninski as meaning a shooting star (stella volans), and this seems to be the meaning here. It therefore cannot be derived from *ġābit* fixed. It is perhaps derived from the root *ġaub* and means retributory. The expression then may mean the retributory stars, comets being regarded as sent as punishments. The I.O. MSS. have *ġuanī*, *ġawānī* ثوانی which is the plural of *ġāniyat* a second (of time) (seconds).

[2] Possessed of forelocks.

[3] In the Ain it is stated that the Hindus reckon the number of comets, meteors, and the like, as a thousand (see text of Ain II. 24, and J. III. 38).

nature of the Sign in which they appear. They move according to the rapidity of the fiery sphere. Their effects depend upon the length of their appearance. Their wondrous[1] influences are detailed in old books in a manner which cannot be described here. Among them was the hairy comet which appeared in the Hijra year 662,[2] when the sun was in the Sign Leo. On that night there was a lunar[3] eclipse to the extent of eleven digits ¼. More extraordinary still it was as large as a man's head, and smoke issued from the top of it. It passed to the countries of Tibet, Turkestan, China, Kāshghār, Farghāna, Transoxiana, and Khurāsān, and was visible for eighty-five days. There were disturbances in all these countries. In Transoxiana and Khurāsān the events connected with Qāīd[4] and Borāq and others illustrate this subject. Accordingly for a long time people reckoned their years and months[5] from it. In 803 (1400) a tailed comet appeared in the zenith of Asia Minor (Rūm). Maulāna 'Abdullah Lisān, and Muḥīu-d-dīn[6] Maghrabī and other astronomers of the time represented to Ṣāḥib Qirān (Timur) that it appeared from the sayings of the wise that an army from the east would conquer that country and capture its monarch. That brightener of the face of Fortune had always meditated a campaign into that country, though his feeble-minded companions did not approve of it. He proceeded thither and impressed on the minds of high and low the brilliancy of his design, and the deep discernment of the astrologers. In the year 837 (1433) a tailed comet appeared in the

[1] *Nairangī-aṣar*. Cf. B.B.R.A.S. XXI, 146 n., where the word *nairang* is taken to mean incantations.

[2] 1263-64. It appears from Pingre's Cometographie I, 406, ed. Paris, 1783, that this comet belongs to 1264. It appeared in France in July of that year.

[3] *Kusūf*. This is usually applied to eclipses of the sun, but as this occurred during the night I suppose the moon is meant. Perhaps however *sar-i-samīn* means the underworld.

[4] The Kaidu and Borāk of Ney Elias' introduction to the T.R., pp. 34, 35. Kaidu was a grandson of Oktāī, and Borāk a great-grandson of Caghatāī. He died in 1270. See also Vambéry's History of Bokhara, 152, 153.

[5] *Sāl u mah-ī derīn*. I.O. MS. 236 has *salmah*. The expression means a date and also perpetually.

[6] An anachronism unless there were two persons of that name. Muḥīu-d-dīn Maghrabī lived in the time of Hulagū (1260). See D' Herbelot's article Mohieddin, and J. II. 19, N. 1. I cannot find Maulānā 'Abdullah Lisān.

first degrees of the Sign of Libra near the Northern Crown. It used to rise and set there. When some days had elapsed a singular movement of it took place. It became spear-bearing (*nezadār*) and went off to a distance from the Northern Crown, and in eight months it disappeared. A great pestilence occurred in Herat and its neighbourhood Every day more than a thousand persons died. M. Ibrāhīm,[1] the ruler of Fārs, M. Baysanghar Arghūn[1] the Shāh of Badakhshān and S. Zainu-d-dīn Khāfī[1] died during this calamity. The contest between M. Shāhrukh and Sikandar the son of Qarā Yūsūf was also a result. Those acquainted with the mysteries of the heavens are agreed that if a comet appear in the angle of dominion, the sovereign of that country will die, and if it incline towards that angle, the possessions of that prince will depart from his hands, and if it occur in a falling angle (sāqit-i-watad) sickness and pestilence will increase, and there will be sudden destruction among the people. A thousand thanks to God that by the blessing of the holy personality of the world's Khedive, the malefic influences passed away from his empire. If from time to time such a terrible phenomenon occur, no great misfortune befalls this country. Still 224
in spite of such Divine protection, that prudent partaker of the banquet of enlightenment ordered the distribution of abundant charities according to the rules of Muhammadans and Hindus. Worlds upon worlds of men were made joyful.

The brief account of this great phenomenon[2] is as follows: On

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[1] Both were sons of Shāhrukh, but according to Beale, Ibrāhim did not die till 1435 or 839 A.H. Baysanghar died in 837, but I do not find that he was ruler of Badakhshān. The I.O. MSS. have Shāh-Badakhshānī, and I suspect that a conjunction has been left out and that Shāh Badakhshānī is a different person from Baysanghar and one of the Shāhs of Badakhshān. Neither does it appear that Baysanghar was an Arghūn. Probably then we should read M. Baysanghar and Arghūn Shāh of Badakhshān. This view is corroborated by I.O. M.S. 23, which has the conjunction *u* before Arghūn. But I cannot find who the Arghūn Shāh was who died in 837; of Baysanghar there is a notice in D'Herbelot, and Bābur also refers to him in his Memoirs. Zainu-d-dīn Khāfī was a famous saint. He died in Shawāl 838, April 1435, B. 592, note.

[2] *Maukibat*, which means a gift. Either this is an euphemism, or it refers to the circumstance that the comet did not injure India. I.O.

the day of Ārād 25 Ābān (5 November 1577), Divine month, at the time when the sun was auspiciously placed in Scorpio, this celestial sign appeared in Sagittarius, in the west,[1] but inclined to the north. It had a long tail, and in some countries it was visible for five months. Astrologers and those acquainted with the secrets of the upper world represented that in some of the inhabited parts of India grain would be dear, and they mentioned the particular places where this would occur. They also said that the ruler of Persia would die, and that there would be the dust of confusion in Irāq and Khurāsān. As they said, so did it come to pass without defect or diminution. About the same time a caravan arrived from Persia and some able and truthful men reported to the august court the passing away of Shāh Ṭahmāsp, the putting to death of Sultan Ḥaidar, and the arrival at power of Shāh Ism'aīl. The brief account of this is that the Shāh—the cupola of paradise—died in Qazwīn on 5 Khirdād.[2] Sulṭān Ḥaidar, his third son, considered the sovereignty as his right, and by the efforts of some of the grandees fancied himself to be secure. He was put to death by the exertions of his unkindly (*nāmihrbān*) sister Parī Khānim,[3] and Ism'aīl[4] M., the second son, who had been imprisoned for 22 years in the fortress of Qahqa,[5] was placed upon the throne. He, from wickedness, sent many of his brothers and cousins to the abode of annihilation. In one day he killed Sulṭan Ibrāhīm,[6] together with eleven[7] of his own brothers.

M.S. 235 seems to have moībat مویبت, which means a country visited by pestilence.

[1] *Bākhtarrūia māīl baghimāl.* J. remarks II, 278, N. 3, that though bakhtar is often incorrectly used, A. F. invariably uses it for the West. I am not sure if A. F. does not mean to connect the length of the tail with the fact that it was visible in various countries.

[2] Or 15 May 1576. At p. 590 of A. N. it is stated that he died on 4 Khirdād.

[3] See details further on, A. N. III, 591.

[4] According to Olearius, translation 1662, p. 346, Ism'aīl was imprisoned for having made war on the Turks without authority.

[5] A fort in the district of Ṭūs, Malcolm, Hist. of Persia, I, 514, ed. 1815, says he was told that Kakha is the modern Sheshah. Kahka is however mentioned by Reclus as being a large town.

[6] Son of Bahrām M. and cousin of Ism'aīl.

[7] According to Olearius, Ṭahmāsp had only eleven sons. The word *barādar* evidently here includes cousins. See the list at p. 591 of A. N.

When the events of Persia were related to H.M. he remarked that the people of that country were beholding the retribution for their ingratitude, and that this gloomy and blood-shedding young man would fill up the measure of his days without moistening his lip (*lab tar nagushta*) with the wine of the world, for the spirit of the age could not endure infatuation. What appeared on the tablet of the tongue abounding in pearls came to pass. There was another proving of H.M.'s knowledge of mysteries, and the celestial phenomenon revealed its qualities both as regards the past and the future. First Shāh Ṭahmāsp went to the holy world before the appearance of the marvel (the comet), and after it had appeared, Shāh Ismʿaīl went to annihilation. He died after having spent one year and five months in bloodshed, dishonour and lust (*ladmihrī*). Many are agreed that he was poisoned by Parī Khānim.[1] During the lifetime of Shāh Ṭahmāsp she was the centre of affairs, and she expected to have still more authority during the rule of this ill-fated and noxious one (Ismʿaīl). He from presumptuousness and conceit dismissed her (lit. drew the writing of dismissal on the page of her position), though he had come to the rank of Shāh by her efforts. That foolish one[2] (Parī Khānim) plotted with the mother of Ḥusain Beg Ḥalwācī Oghli from whose hands he (Ismʿaīl) took his mixtures 225
and electuaries. On the night of Bahman 2 Āẕar, Divine month (November 1577), of the following year (985) some horses had come as a present from the ruler of Gurjistan. He went to the polo ground to see them. As the comet cast its baleful shade, and as the astrologers of Persia agreed with the sages of India, they read to him the celestial message, and begged him to put off his visit. They were not successful. From the ground he went to the quarters of Ḥusain Beg which were close by. Sharīf Qazwīnī brought to him

[1] Malcolm calls Parī K. the favourite sultana of Ṭahmāsp, and this error is repeated by Oliver, J.A.S.B. 1887, p. 42. She really was S. Ṭahmāsp's second daughter, and was betrothed to Badī-uz-zamān, son of Bahrām M. See the ʿĀlam Ārāī and A. N. III, 590, 91. A. F. there gives a history of the Ṣafavī family.

[2] Cf. Lowe 248, where she is called Parī Jān Khānim. The expression is *kotāh khirad*, and possibly it refers to Ismʿaīl; in that case the word *hamdastān* must be taken to mean "associated with" and not "plotted."

from the house the accustomed intoxicant and remarked that the seal on the box (*ṣuqqa*) had been removed. As the inevitable time had arrived he lost the thread of intelligence and made answer that if he had got it from the hands of Ḥusain Beg's mother there was no fear. He took some of it, and gave some to Ḥusain Beg. It has been heard from the secret knowers of Persia that when a portion of the night had passed away, Parī Khānim, whose house was in the neighbourhood of that confectioner's son's house, sent Shāh Wardī[1] with some men dressed up as women. They squeezed the throat and other vital parts of that infatuated madman and so killed him. As the heat of madness and his apprehensions kept him in solitude, his real well-wishers—who are the guardians of realm and religion—had not access to him. Indeed the servants generally could not set foot there. By the evil effects of such conduct—which is the worst of behaviours in the generality of those living in a state of association, then what must it be in the case of rulers,—these things happened to this confused and presumptuous one. The door of that house of terror was closed and nothing transpired from it. At last, night turned to day, and day had almost turned to night. No one had the courage to make a search. By the exertion of great courage M. Sulaimān the Vizier and M. Muḥammad Ḥakīm and some others of the nobility came there. They read the inscription of hopelessness on the portico and broke open the door and found him lying dead. The little finger of the right hand was broken, and the skin of the forehead and nose scratched (here follow some lines of rhetoric) .....

The condition of this inwardly-disturbed one is impressed upon
226 all. He began by vexing his father, and benefactor, and sovereign. The latter from affection and foresight and in hopes of curing him put him into prison. When by heaven's decree he became the ruler of Persia, he extinguished the lights of wisdom and settled down in the indulgence of lusts. He choked the fountain of wakefulness and engaged in killing friends and cherishing foes. He did not appreciate the dignity of sovereignty, and was active in ruining the foundations of dominion. Apparently it is the wondrous design of the stewards of fate that the bliss, benevolence, and justice of the

[1] I.O. MSS. Bardi.

ruler of India may be proclaimed to the world, and that all the subjects of that abode of pleasantness may recognize the Imām of the time, and reposefully spend their days in the auspicious dwelling of thanksgiving.

Verse.

Praise be that mine of earth and water,
Which has produced such a brilliant pearl.
May there be a glorious day in that sky,
Which holds such a night-gleaming star.
O God, preserve that dervish-loving king,
Under whose shadow lies the repose of mankind.
Make him rule long over the people:
Keep his heart alive for the blessing of worship.

In fine, after some insincere expressions of grief, and more feastings, they proceeded to search for another ruler. As there were no royal sons who were fit for sovereignty they turned towards Parī Khānim, but she understood the spirit of the age and refrained from the high office, and referred them to Sulṭān Muḥammad Khudābanda the eldest son of Shāh Ṭahmāsp, and whose blindness had saved his life in the time of the bloodshedding Shāh. Her sole idea was that he should nominally be the Sulṭan and that the real power should be with her. M. Sulaimān, who knew her craft and fraud, and who from his good disposition was not in league with her, fled to Shīrāz from fear of being made prisoner. He made known her wickedness, and agreed with the mother of Sulṭan Muḥammad Khudābanda—who was the real mother of Shāh Ism'aīl—that they should get rid of this turbulent strife-monger. When Sulṭān Muḥammad Khudābanda approached Qazwīn, Parī Khānim became aware of their designs and barricaded the city. Shāmkhāl Carkas (Circassian) her maternal uncle with some thousand men prepared for battle. By the exertions of right-minded people things had a peaceful termination. The lady of Irān made her excuses, and the farsighted men who were watching for their opportunity accepted them. When she came near the camp, they represented that there was not an auspicious hour on that day. She 227
should cause her litter to be set down near the camp, and Shāmkhāl with the main body of the troops should encamp in the neighbour-

hood of a certain village. In the morning before they joined the men of the camp, Shāmkhāl would be exalted by doing homage (to Khudābanda), and after that there would be a review of the troops on a grand scale. By such pleasing tales they (Parī K. and her uncle) were lulled into security. When night drew her dark mantle over the face of day they induced Amīr Aṣlān Afghār, who was ostensibly a friend (*az dostān rasmī*) of Shamkhāl, to go and prepare a feast of friendship in his private apartments, and to kill him (Shamkhāl) while he was off his guard. And they arranged to give that slave of gold the governorship of Ispahan as a reward for this service. He who did not understand the rights of acquaintanceship, and much less did he know the mysteries of friendship, spilled the cup of his existence. At the same time they seized that veiled[1] one of 'Irāq, and she shortly afterwards became a c rtained-sitter 'n the secret chamber of annihilation.

One of the occurrences was that on 2 Āẕar, Divine month, in the neighbourhood of the town of Kotputlī,[2] Mozaffar K., Rajah Todar Mal and Khwāja Shāh Manṣūr were summoned to a privy council and there was a discussion about the affairs of the empire. Many matters were disposed of. The Sarkār of Bihar was assigned to Shujā'at K., Mīr Mu'izzu-l-mulk and other servants. The mints of the imperial dominions which had been under the charge of *caudha-*

[1] A. F. seems to have thought that as he was telling a Persian story, he could not be too flowery and enigmatical. The result is that he is more than usualiy tortuous and obscure. It appears from the 'Ālam 'ārāī B.M. MS., Add., 16, 684, 65b, that both Parī K. and Shamkhāl were put to death. The text has haqīqat-guzīn-i-'Irāq and I.O. MS. 236 has *haqīqī-gasīn*, as if the passage referred to Shamkhāl; but I believe that it refers to Parī K. and that the true reading is that given in I.O. MS. 235, p. 510a, 1, 2, maqanna gazīn. گزین مقنع "the veiled one." The expression "the veiled one of 'Iraq" thus corresponds to that used a little above where Parī K. is called "the lady of Irān, bānūī Irān."

[2] Text has Kotbūqlī, but the variant Kotpūtlī seems right. It was in Sarkār Nārnaul, Province of Agra, J. II. 182 and 194. There was a copper mine near it which perhaps was the reason why the question of mints was discussed there. The passage is translated in Elliot, vi, 57, where the town is spelt Kotpakalī. Kotpūtlī is in Jaipur and about 60 m. N.E. the city of Jaipur, I.G., XVI, 3.

rās[1] were divided. The directorship of this weighty business was assigned to Khwāja[2] 'Abdu-ṣ-ṣamad *Shīrīnqalm* in Fatḥpūr, the capital of the empire. The mint at Lahore was assigned to Moẓaffar K., that in Bengal[3] to Rajah Todar Mal, that in Jaunpūr to Khwāja Shāh Manṣūr, and that in Gujarat to Khwāja 'Imādu-d-dīn Ḥusain, that in Patna[4] to Aṣaf K. On the same day it was ordered that square[5] rupees should be coined. On 9 Āẕar the victorious standards cast their shadow on the town of Nārnaul.[6] There as the holy heart of H.M. is impressed by the glory of searching after God he visited the abode of Shaikh Niẓām[7] the hermit, and conferred eternal joy on that vaunter[8] of simplicity. By the strength of his good fortune no sadness found its way into his holy heart from his not finding the marks of enlightenment (in S. Niẓām). He only increased his search. As, owing to his wide capacity and exceeding research, his far-seeing glance did not fall upon his own treasure,

[1] A Hindu title. See Wilson's Glossary. It does not appear that A. F. explains it anywhere. But at B. 268 he speaks of Akbar's resuming the fiefs of the Caudhris.

[2] B. 107 and 495. He was a calligrapher. A. F. says he owed his perfection to a glance from Akbar.

[3] A. F. does not say here or elsewhere at what place in Bengal the mint was. Here and at B. 31 the word Bengal (Bengāla) is used as if it was the name of a city. Perhaps Gaur is meant, for Tāṇḍa is separately mentioned at B. 31.

[4] This is the Patana of B. 31, and is apparently Patna in Bihar and not Patan in Gujarat,

[5] These are the Jalāla rupees mentioned at B. 31.

[6] Nārnaul or Nārnol is described in Tiefenthaler I. 212. He says it was rich and populous until Jai Singh took it from the Muhammadans. It is now in Patiala, I.G., XVIII, 389.

[7] B. 538 where A.F. has entered him next to his own father as one who understood the mysteries of both worlds. But possibly, as B. suggests, A.F. may mean here S. Niẓām of Amethi. He is described in Badayūni III, 15, while S. Niẓām of Narnol is described at id., p. 26. He belonged to the Cistī order.

[8] *Dukkān ārāī sāda lūḥ.* The expression seems intended as a sneer. According to the Bahār-i-'ajam *dukk'ān arāī* is used metaphorically to mean boasting and the passing off things of small value as being of great price. The interview is mentioned in the T.A. and Niẓāmu-d-dīn quotes a verse apropos of it. Evidently Akbar was then a keen inquirer, and Niẓāmu-d-dīn says there was a mystic assemblage or dance.

and as he did not find in the wearers of rags, or in the learned of the age, any notes of the spiritual and celestial mysteries which are attached to the table of the bounty of God, his thirst for the limpid waters of truth increased from time to time. Hence it is that the intimates of the majestic council (of God) have described as eternal that pain of seeking after God which is the zenith of truth. The incomparable Deity does not come within the field of the heart of mortals, nor does the foot of search become worn out.

228 On the day of Āsmān, 27 Āẕar, Divine month, the capital of Delhi was glorified by the Shāhinshāh's advent. First of all he circumambulated the holy shrine of H.M. Jinnat Āshiyānī, and showered gifts on the custodians. Then he visited the other tombs, and was also lavish in gifts there. On 3 Dai, Divine month, he visited the quarters of Shāikh Farīd[1] Bakhshī Begī, who had many seats in that delightful neighbourhood on the banks of the Jumna, and had places of worship which were the praying-spots of India. H.M. went there at the request of this loyal servant and thus secured for him eternal exaltation. On the 5th of the month he halted at the sarai of Bāwalī[2] and spent some days there in administrative work and in hunting. The needy of that part were replenished from the table of his bounty.

One of the occurrences was the arrival of Ḥājī[3] Ḥabībullah. It has already been mentioned that he had been sent to the port of Goa with a large sum of money and skilful craftsmen in order that he might bring to this country the excellent arts and rarities of that place. On the 9th he came to do homage, attended by a large number of persons dressed up as Christians and playing European drums and clarions. He produced before H.M. the choice articles of that territory. Craftsmen who had gone to acquire skill displayed the arts which they had learnt and received praises in the critical place of testing. The musicians of that territory breathed fascina-

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[1] Farīd Bukhārī, B. 413 and 415, n. 1.

[2] Perhaps Bawal in Sarkār Rewārī, J. II, 293. Pālam, to which Akbar went afterwards, according to the T.A., was in Sarkār Delhi, J. II, 86.

[3] Cf. *ante*, text 146, and Elliot v, 407, and vi, 57. The organ is described by Badayūnī in an obscure passage, Lowe 299. See Vullers, s.v. *arghanan*. It is the Greek organon.

tion with the instruments of their country, especially with the organ. Ear and eye were delighted, and so was the mind. Also at this halting place Khwājā Ghīāṣu-d-dīn[1] ʿAlī ʿĀṣaf K. arrived from Īdar and did homage, and his brother's son J'afar Beg, who had come from Persia, performed the prostration.

[1] Blochmann 433. His nephew J'afar was distinguished in Jahangir's reign.

Poorab

(East)

Introduction

The word Poorab means east, the direction from which light comes. Shah Abdul Latif has used it as a symbol of the spiritual goal of the ascetics.

It is a short sur containing two sections only. In the first section Shah Abdul Latif addresses a crow asking him to take his message to his beloved and deliver it humbly, courteously and in confidence, in the exact words given. This kind of courier service used to be usually performed by the trained pigions in olden times, but Shah Abdul Latif makes crow the messenger, as trained crows too used to perform this service and also because the bird is so familiar to the Sindhi masses. The message to be delievered is that the beloved who has taken long to return from the distant land where he has gone, may now kindly return, as separation has caused much misery.

Agha Muhammad Yakoob in the second volume of his recently published book "Shah Jo Risalo alias "Ganje Latif", writes, "The sur, more particularly its first chapter, is full of the poet's expressions of longing to meet the Prophet and the crow referred to as the emissary to the beloved is an angel, for as the poet tells us the messenger crow is not an ordinary crow that eats carrion and other filthy stuff. He is the crow of the beloved.

The second section refers to the ascetics about whom much has been said in Khahori and Ramkali, These ascetics after keeping company with Shah Abdul Latif for some time, quietly left one early morning for their onward spiritual journey, leaving him in utter despair and in pangs of separation from them.

Section I

1

"ڪري ڪانگ! ڪرنشون، پيرين پرينءَ پئيج"،
"آئون جو ڏيانءِ سنيهو، وچ مر وساريج."
الله لڳ لطيف چئي، ڳجهو ڳالهائيج
"چوان تيئن چئيج، ڪنياتا! خوش هئين."

Crow! With humility and obeisance greet the loved one,
Forget not on the way, the message that I ask you to give.
For God's sake, speak in confidence, Latif says,
Repeat as I say that you may always see happy days.

2

"آئون اُڏامي ڪانگڑا! پارانيان پچار،
"ويهي هت وصال جو، تان ڪوتر تنوار،
"جي ڏسڻ ۾ ڏيسار، سي اُڏامي آڻ پرين."

Fly back to me oh crow! give me my loved ones' message,

Sit with me then and say when will I meet him,

He, who is in distant land, bring him close to me on your wings.

3

"پارانيان پچار، متي لام" لطيف چئي،
"ڦير مَ فضيلت تون، جاکر اوهان کار،
"جي ڏُني ۾ ڏينار، سي اُڏامي آڻ پرين."

Sit on a tree's branch and give me his message,

Change it not but deliver it the way your kind's habit is,

Bring the bright faced one, close to me, on your wings.

4

"وهلو ور، وريا پرين، آءُ ڪانگا لنئن لات،
"ويا جي قلات، سي اُڏامي آڻ پرين."

Return in haste, oh crow! say that he will soon come,

He who has gone to far off land, bring him to me on your wings.

5

"ڪانگل! سي ئي ڪوڻ، پرين جي پر ڏيڻ ويا،
"جنين ريءَ جهان ۾، اکڑين اروڻ."
"لله لڳ" لطيف چئي، ڪج ڳاراچو ڳوڻ،
جي ڏمريا ڪنهن ڏوڻ، سي اُڏامي آڻ پرين.

Oh crow! bring back the loved one, gone to distant land,

Without whom my tears are dry, so much I have wept.

Come and celebrate such auspicious news, for God's sake!

Appease the offended loved one and on your wings bring him back.

6

"پرين جي پرديس ۾، تن جي ڪانگا! ڪج خبر،
"تہ سپ مڙهيان سون سين، پکي تنهنجا پر،
"گهمي متان گهر، ڏج پارانيا پرينءَ کي."

Crow! give me news of the loved one who is in distant land,

Your feathers I will with gold decorate,

Encircle his house, give my message to him.

7

"ڪيڊي ڪانگا! ٿو ڏيان، هينئون ساڻ هٿن،
"وڃي کاءُ ولات ۾، اڳيان عجيبن."
"پرين متان چون، تہ هيءَ قربان ڪير ٿي؟"

Crow! with my own hands I will pluck my heart and to you give,

That he may ask, who is this one offering such a sacrifice?

8

Loved one's crow! give me a joyous message,
You smell of spring and monds of musk,
For you have flown over the yard of loved one,
At your sight, all my sorrows have vanished.

"ڪانگل قربين جا، اچي وائيءَ وڃ،"
"تو ۾ بوءِ بهار جي، مُشڪ ڪتوريءَ مڙ،"
"اچي عجيبن جو، اورانگهج اڱڻ،"
"تو کي پسي تڻ سورنڪان صاف ٽئي."

9

Today the crow has brought felicitations from the loved one,
My wishes are granted, full of joy I have become,
My appeals are answered, loved one returns with God's grace.

"آنديون! ڪانگ قريب جون اج واڌايون واهه!"
من مرادون پنيون، ٽيون سرهائيون ساه
"آندا پرين الله، سڏ منهنجا ساب پيا."

10

Oh crow! your flight has new life in me revived,
Crossing other branches on a conjoined branch cawing you sit,
Fly away from it, that the loved one may come to my abode.

"ڪانگل تنهنجي چانگ، جڏو جيءُ جياريو"
"مٽان لامن لت ڏيو، پوليين سر ٻيلانگ،"
"آڏر مٽان ڦانگ، ته گهر آون پرين."

11

Dear crow! take this my message to my love,
Say, you have taken long for some cause loved one,
In sadness I pass, days of separation.

"ڪانگل نيئي ڪانگ، منهنجي ڏي محبوب کي."
"لالن! لايئي ڏينهڙا، ڪنهن ستاڻي سانگ،
اوهان ريءَ اڙانگ، ويني ورهه وسائيان."

12

Sorrow increases in loved one's absence,
Eyes axe fixed on the village's path, expecting him,
Messengers at last will bring news of his return.

ريءَ پريان پر ديس ۾، وره وڌي ڪئي وس،
اکيون پار پرين جي، ٽيون گام نهارين گس،
ڏينڊا پانڊي ڏس، کينءَ جون آڻي خبرون،

13

Crow! I would stand indebted to all your kind,
If you fly at early morn, to loved one's side,
Beloved, there is none in the whole world, the like of you.

"زاغ!" تنهنجي ذات جو، ٿورو مٿي مون،"
"اڏامج"، عبداللطيف چئي، صبح سيڻن ڏون،"
ڪج وينتيون وترين، ٻاجهائج ٻهون،
"ته لالن! ڪونه لهون، جهوتو جهان ۾."

14

Crow coming from the loved one, may well sing on bough,

قربين جو ڪانگڙو، مٿي ٽار ٽلي،

Bringing news of fclicitations, crow smiles, is full of joy,

He is the one, who took my message to the loved one,

Let him tread on my eyes, for he is courtier of the loved one.

كٽيو كيانتو خبرون، كيرون ڏيو كلي،
لائي جنهن لالن سين، منهنجي بات بلي،
سو ور چشمن تي چلي، جو درباري دوس، جو.

Section II

1

Those are comforting eyes, that loved one raises and smiles,

All my sorrows are gone in a while,

Ascetics are not reduced by hunger as people think but by separation's sorrow.

تن اکين أتان سک، کلندي کٽن جي،
پرين پاهوڙ سان، ڏور ڪيا سڀ ڏک،
ماڻهن ليکي ٻک، سامين سور سنها ڪيا.

2

You call yourself an ascetic and crave for comforts,

In your spiritual journey, naught have you learnt,

You have not reached your goal, you want the prize

Come what might, be true to your spiritual guide.

"سامي چائين سک، طلبئين! سکئين نہ، سامي!"
"ايجا اورئين پنڌ ۾، تون ويٺين وسامي"،
"گر کي تون نہ گڏئين، چائين انعامي،"
"دائم مدامي، پورو رهيج پرينءَ سين."

3

Wayfares of the East, at mid-night left, closing their huts,

At dawn sound of sanyasis was not heard,

Such is ascetics' kind, that they befriend not the unaffected ones.

پوربيا پوري ويا، آسڙ آدي‌ءَ رات،
سيم نہ سناسين جون، پچارون پريات،
ڪا جا جوگي‌ءَ ذات، مٽ نہ معذورن جا.

4

They chose the road that goes to the east and went,

Giving up their homes here, they build their huts ahead.

مٿي راهہ روان ٿيا، پورب پوريائون،
هي گهر گهوريائون، آڳاندياڻون اڳيان.

5

When I remember them, I cry out 'East', 'East',

Longing for them, my tears do not cease,

This sad thought tortures me that loved ones I will not meet again.

پورب، پورب، تن ڪرون، جب هينڌڙي آون پور،
سڪندي کي سڄڻين، نکون لايون نور،
ماريس تنهين سور، جيئن ساجن سجي، نہ ملي.

Karayal

(The Swan)

Introduction

The word Karayal means a beautiful bird, a swan or a peacock. Shah Abdul Latif in this allegory addresses a swan which is used as a symbol for all those people who seek Divine light and Divine guidance for the good of humanity. They include the prophets, the saints and sages and all benefactors of mankind.

The efforts of such persons inspired with a holy zeal of seeking supreme values for themselves and for the rest of mankind, are often thwarted by materialistic and base minded persons who are referred to as cranes and herons. They are the ones who make turbid the clean and pure water of life with their beaks, they dig out fish from the mud lying on the water banks Such persons only care for the immediate material gains and are capable of employing the meanest methods of obtaining them. The swan is advised to keep away from the banks, the cranes and herons and fly upwards to discern, discriminate and pick out pearls that lie in the bottom of deep waters. Thesc pearls are the eternal values that never die.

The sur has two section. In the first section, seekers of eternal values of life are advised to avoid company of those who might get them involved in base and materialistic pursuits so as to neglect their ultimate goal In the second section the world inhabited by such persons, is symbolised as a desert where these venomous snakes have made their holes. When they abound, they pose a serious threat to those who are seekers of life's true values.

But ultimately they will succeed for they are the ones who hav sacrificed all base affinities for higher cause. Burning of Junagarh is used as a symbol of eschewing such affinities.

Section I

1

High in the air, swan flew saying, "God is unique".[1]	"وحدہ" وائي، چڑهندي چياٸين،
That dark cloud it crossed where birds are tried.	سو لڙ لنگهياٸين، جتي پارک پکيان،

2

Giving up cranes' company, skywards it flew,	ڳهن سي ٻاڙ هٽي اڏاٽو آڪاس،
Where its love dwells, near that fount, it drew.	جتي پرين سنداس، سو سرمٽي هنجڙو.

3

Its glance on the deep sea, it scrutinises it,
Swan is used to the pearls that are in water's depth.

اکڙيون اوڙاه ۾، اَپو تکي تار،
پٿون جي پاتار، هنج تنين جو هيرَئون.

4

Why not enter the waters deep for the pearls?
With the bank, Oh swan! you have no concern.

وڃين نہ پيهي، پٿن لءِ پاتار ۾؟
ڪنڈيءَ تي ڪيهي، هاج تنهنجي هنجڙا؟

5

The Swan nears the ocean's depth that now it knows,
Deep down has it found pearls more precious than gold.

ٿيو حضوري هاڻ، سوجها پيس سرجي،
ڪنڊي لڏي ڪاڻ، پکيڙي پاتار ۾.

6

Clean water has been muddied by the cormorants,
To that reservoir swans are ashamed to come.

اڇو پاڻي لڙ ٿيو، ڪالوريو ڪنگن،
ايندي لڄ مرن، تنهن سر مٿي هنجڙا،

7

Were you to make friends with the swans,
Never again will you be in company of cranes.

هنجن سين هيڪار، جي ڳڙ ڪري نهارئين،
ٻگهن ساڻ ٻيمار، ٻيلهه نہ ٻڌين ڪڏهين.

8

Swan! fly to the fount where you are remembered,
Before hunters plan to have you hunted.

آءِ اڏامي هنجڙا! سر ۾ سارينئي،
تمان مارينئي، پاڙهيري پهه ڪري.

9

Lotus roots in deep waters grow, high in the air flies the humble bee,
Their hidden wishes were accomplished, God willed it so to be,
Glory to that love which united the humble with the lofty.

ڪونر پاڙون پاتار ۾، پونر پري آڪاس،
ٻنهين سندي ڳالهڙي، رازق آندي راس،
تنهن عشق کي شاباس، جنهن محبتي ميڙيا.

10

Lotus in deep waters bottom, bee flying in the air,
Symbol of love is the tale of these together.
Loves' draught they both drink, yet their thirst is never quenched.

ڪونر پاڙون پاتار ۾، پونر پري ۾ سيح،
ٻنهين سندي ڳالهڙي، عشق ايءُ اهج،
توءِ نہ لهين اَج، جي پيو پسين پاڻ ۾.

11

Swans fly when people are asleep,
Pearls they discriminate and pick from waters deep,
Can hunters' guiles harm such ones?

جيهر لوڪ جهپ ڪري، اوهيرا اڏامن،
پٽون جي پاتار جا، چيتاريو چڻن،
ڪوهه ڪندا ڪي تن، پاڙهيري پهه ڪري؟

12

The lovely peacocks are all dead, not one swan remains,
Crafty snipes once again inhabit my native land.

ويا مور مري، هنج نه رهيو هيڪڙو،
وطن ٿيو وري، ڪوڙ نه ڪانيرن جو.

Section II

1

Bird, cage, fount and swan, all are one and the same,
When I peeped within, this knowledge to me came,
The hunter that the body fears also is within.

سو پکي سو پيجرو، سو سر، سوئي هنج،
پيهي جان پروڙيو، مون پنهنجو ئي منجهه،
ڏيل جنهن جو ڏنجهه، سو ماري ٿو منجهه ڏري.

2

Consider not vipers' lean young ones as harmless snakes,
Their sting fixes elephant in one place.

سنها پانءِ مر سپ، وياءَ واسينگن جا،
جنين جي ڇڙپ، هاٿي هنڌان ئي نه چري،

3

Snakes that dwell in deserts have poisonious sting,
Attractive in appearance, their sting sure death brings.
Confronting them, leaves no chance to survive.

آسڻ جن! آريج مر، او ڪچر وهه ڪري،
تن جا مُنهن ملڪن جهڙا، تڪو تان نه ٽري،
جي اَنهين ساڻ اڙي، تہ ڪانهي جاءِ ڏريءَ جي.

4

Snakes that dwell in deserts, have a different trait,
Thorny bush on which their poison is spilt, can kill if grazed.
Throughout the world are such snakes well known,[2]
Who is so brave that in battle would face such foes?

آسڻ جن اريج مر، تن جي وهه جو ورن ٻيو،
تن جو ڪنڊوئي ڪم ڪري، جي مٿس پيرپيو،
پرينءَان آهي پڌرو، تن نانگن جو نهو،
ڪليءَ ويل ڪهو، جو سامهون ٿئي سپن ڪي؟

5

With these black snakes even the peacocks avoid clash,

If by some crafty means they sting, all the peacocks go back.

ڪنھن ڪنھن ڪاريءَ ذات کي، موريہ مٽيائين،
جي چترا چکيا ڪري، تہ وڳ ورائي ڏين،
سات سمورا نين، جي مٿين پائئين موٽيا.

6

Some foolish one would provoke such a snake,

If it stings, the bitten one never returns to his place,

He invites instant death or for the rest of life, longs for health.

پھرين ڪاري نانگ جي، ڪو چرڪيل چيڙ ڪري،
جي ھٽي ڏنگ ڏسائيو، تہ ويجھو تان نہ وري،
جيڪي ٽپ مري، جيڪي سڪي صحت کي.

7

Viper! you have made enemies of those who charm snakes,

You cannot escape, on your hole a foot is placed,

This is the dwelling place of those who set Junagarh ablaze.

ڪُپرا! ڪاروڙين سين، وڏو وڏءِ ويرَ،
نانگ! نہ ويندي نڪري، تو ڏر مٿي پيرَ،
ھيءُ تنين جو ڍيرَ، جن جھونا ڪڙھ جلائيو.

Dahar

(Desert Valley)

Introduction

The word Dahar means a desert valley. Muhammad Yakoob Agha in his recently published 'Shah Jo Risalo' writes in the introduction of this sur that prior to river Indus being restrained by the construction of the barrages and other modern methods of irrigation, branches used to flow from it, which sometimes used to pass through many miles of desert area and finally discharge themselves into marshes. It seems that one such branch which had made the region through which it flowed, a flourisning and prosperous centre of trade and commerce, had either dried up for some reason or the water had receded, bringing an abrupt end to its prosperity and forcing its people to migrate. As Shah Abdul Latif stands there, watching this barren and desolate sight, many thoughts come to him which may appear disjointed to a casual reader but the underlying theme of them all is the rise and fall in the affairs of men, the uncertainty of their fortunes, and transitoriness of life.

The sur is replete with symbols and is a masterpiece of poetic art. Dahar or the desert valley is the symbol used for this world in which many civilizations saw their pomp and grandure, then disappeared, hardly leaving any trace behind. Similar is the case of the individual. He struggles, works hard, achieves success and prosperity, not visualising their uncertainty, he becomes proud and vain like the big fish in the pond mentioned in the sur, forgeting that death is lurking for him, behind the corner. It reminds us of P. B. Shelley's poem, "Ozymandias".

Now that the water of the branch which was the life-giving force of the region, has receded leaving behind a near dry bed with just little water in it, nothing else can grow in that previously fertile valley save the thorny desert trees and other desert bushes that can survive with very little water or even without it, for a long time. Shah Abdul Latif using a beautiful poetic device, addresses a Kandi tree and asks it to relate to him the type of life and activity of that region which was once bursting with life and activity.

Watching this sight of decay and desolation, our poet's thoughts are turned to God and to the Holy Prophet (PBUH). He expresses his longing for a pilgrimage to Madina and prays for favourable circumstances that would give him a chance for a union.

Always conscious of the plight of the poor, helpless and friendless women whose huts are dilapidated, he prays to God to help them as none but He alone is the surest refuge and help. He refers to the suffering of the poor in a sublime metaphor,

when he says that what men consider to be drops of dew at dawn, are the tears that night sheds at the sight of the suffering of the poor. He prays to God to remove their suffering and expresses amazement and admiration at His marvellous and mysterious ways by which leaves may sink and stones may float.

For those who pay no heed to the ultimate object for which we are here, and are too much engrossed in the many attractions and flimsy things of the world, the poet uses the symbol of the woman who ignores her husband and flirts round with others. Humanity is further advised not to ignore the spiritual life which goes side by side with the physical, material life. The symbol of sleep is used for indifference at making any attempt to achieve a higher life and being completely envolved; in the material life. Though a sufi, Shah Abdul Latif does not believe in complete renunciation, that is why he says sleep as much as it is good for you. Much emphasis is laid on getting up at dawn to pray. Human beings are reminded that the nights they spend in this world, are fewer compared to those to be spent in the grave.

The lone crane that he sees there, reminds him of the unity and bonds of fraternity among the birds which human beings lack. The convoy of cranes flying back home and the lone crane's longing to return and be with them, are used as symbols for one's love of native land. It has been observed that men mostly long to return to their own native land wherever they may have been living and how prosperous they may be. The arrow shot at the convoy of cranes, is the symbol of death which separates one from his dear and near ones and creates fear in the hearts of others. The hard ground which hurts the feet of the cranes on landing, is the symbol of the hardships of life which affect many of us and which we encountrer in this world.

The sur closes with the mention of Lakho, a controversial person who was praised by some as helping the poor and redressing their wrongs and by others censured as a terrible dacoit feared by many. It can be taken as a symbol of death.

Section I

1

Oh! Kandi tree, relate to me some of this branch's tales
How its merchants then spent their nights and their days?

ڪر ڪي ڳالهڙيون، ڪنڊا! ٻور ڏٽين جون،
ڪيئن سي رانڙيون، ڪنهن پر ڏينهن گزاريئين؟

2

If in earnest you lament the loss of its merchants,
Your branches in this way would not blossom.

جان تو هڙو سور، ڪنڊا، ٻور ڏٽين جو،
مٽي لامن ٻور، موريءَ مير نہ ڪريئين.

3

How old were you, Kandi tree, when the branch

ڪنڊا! تون ڪيڏو، جڏهن پريو ٻورو وهي؟

was full to its brim

Since then have you met the like of such merchants?

جسودن جيڏو، تو کو گڏيو پهيڙو؟

4

In truth, the branch is dry, on its banks brushwoods grow,

So dry it is that no merchants and no tax collectors themselves show

سچ ڪ سکو ڍور، ڪنڊيءَ اڪ ڏلاريا؟
جنگن چڏيو زور، سر سکا سونگي گيا؟

5

The branch is dry, save its bottom, dry grass grows around,

Patihal branch never since then in water abound,

Rarely does one come across signs of human beings.

سُکي ڍور ڍيون ٽيو، ڪنڊيءَ ڏنو ڪائو،
سو پاڻي پٽيل ۾، اڳيون نہ آيو،
ماڻهن ميڙائو، ڪنهين ڪنهين پيٽين.

6

The fisherman knew that branch's water would not be the same,

They sailed with their boats away from that place,

Causing worry to prosperous merchants and businessmen.

ڍور نہ اڳينءَ ڍار، مهند ملاحن لنگهيو،
موڙي چوڙيا مکڙا، پسي پاڻيءَ پار،
جسودن جهايار، پيڙا ويڑ وماس ۾!

7

Oh big fish! when the branch was full, you returned not,[1]

Now in shallow pool you have been caught,

On your head, bear onslaught of fishermen's blows.

جان واهڙ ۾ وهه، تان تون مڇ! نہ موٽئين،
ڪائي ۾ ڪوهه ڪرئين، پوءِ موٽڻ جو پهه؟
سر مٿي تون سهه، مهميزون ملاحن جون.

8

When water was in abudance, you returned not,

Today or tomorrow, you will be in the net of fishermen caught.

جان جر هيڙو جال، تان تون مڇ! نہ موٽئين
پوندءِ اڄ ڪ ڪالهه، سانيوين سانگن جون

9

When waters' level was high, you returned not,

Fishemen now with stakes have blocked all your paths.

جان جر هيڙو سير، تان تون مڇ! نہ موٽئين،
اڏا اڏي ڪير، گهٽ بہ جهليا گهاٽئين.

10

Oh fish! you grew so big and fat that you butted all you met,

But the expanse of water once you saw now retracts.

متو آهين مڇ، ٽلمو ٽو ٽونا هڏين،
جا تو ڏٺي آڇ، تنهن پاڻيءَ پُنا ڏينهڙا.

11

When my Beloved fixed the fishing hook in my gills,

I did not die instanteous death but perpetually suffered.

ڪُنڊي ڪلين وچ ۾، جڏهن هنيائون،
موت نہ ماريائون، ڏور ڏيئي ويا ڏک جي.

Vai

Beloved! for my sake, you have adorned yourself,

Mother, longing for Him, will one day bring me to death.

Tripping on toes like peacock and Babiho[2] he comes,

Profusely scented with perfume and sandalwood that him becomes,

His presence makes rocks fragrant with fresh flowers and musk,

Lord! unite Abdul Latif with his perfumed loved one.

لايئي جا ون ڪي، سا ڪانڌ! ٺُهنجي ڪورا،
ماءُ ماريندم ڪڏهين هن پرينءَ جا هورا،
اڇن پرين پهڪيا، ڪر ٻابيهو جيئن مورا،
سيٽين سرڪنڊ سپجي، ٻيو عطر پرين اتوارا،
ڇپر ڪٿوري ٽيو، پي تازي ڦلن ڦورا،
"الا" عبداللطيف ڪي، "سانول ميڙ سنيوڙا."

Section II

1

Madina's[3] Lord, please hear my humble calls.

Do help those in trouble, the waters to cross.

"مدنيي جا ميرا! سڻ منهنجا سڏڙا،"
"سڻ تنهنجي سير، تون پار لنگهائين پيڙا".

2

Lord, let such wind blow that to my love, it brings me close,

I cannot give up hope of being on this oft traversed road.

ڏڻي! سو وارئين واءُ، جو ميڙائو ڇڻين،
وهيءَ واٽ مٽاءِ، هئين آسر مَ لهي.

3

My eyes eagerly gazed for the camel riders but they

نيڻ جي نهارين، سي اڄ نہ اوني آيا.

came not today.

In king Punhoon's separation watery tears shed not they.

هنجون نہ هارين، پاڻي پنهونءَ جام ريءَ.

4

Instead my watchful eyes shed tears of blood,

This humble one if reconciled, Punhoon may take with himself.

نيٺ نهاري منهنجا، روئي ٽيا رت،
پنهونءَ هوءَ پهت، تہ پاري نين پاڻ سين.

5

With hope in my heart today I sweep my yard,

May my long absent love, return from mountains far off.

اڄ اڱڻ ڪيڻان، آسر لڳي سوريان،
ڏونگر ڏينهن لڳان، مان ورڪن سپرين.

6

Allah be your name, I pitch my hopes in thee,

Creator, there is no limit to your infinite merey

Your name alone through my whole soul pursuades.

"الله جيئن نالوءِ، تيئن مون وڏو آسرو،
خالق تنهنجي کاند جو، پرو پاند نہ ڪوءِ،
نالو رب سندوءِ، رهيو آهيم روح ۾."

7

Lord, you act in amazing modes,

Leaves you drown below, stones you let float!

If you condescend to come to me, honoured I would be, the sinner that am

"صاحب! تنهنجي صاحبي، عجب ڏڻي سون،
پن هوڙين پاتال ۾، پٿر تارين تون،
جيڪر اچين مون، تہ ميريائي مان لهان."

8

Great as asking name, I ask thy favour equal to that,

Without any pillar or post, you are the protector and shade,

What more to say, all is known to That.

جيڏو تنهنجو نانءُ، ٻاجهہ بہ اوڏيائي مگانءِ،
رءَ ٽنيين، رءَ ٽوٽيين، تون ڇپر، تون ڇانءِ،
ڪجاڙو ڪهانءِ؟ توکي معلوم سيکا.

9

Protect me oh Lord! for I am a sinner exposed,

Cover me with Thy mercy's garments' edge, be my shelter, Lord!

"ستر ڪر ستارا! آئون اگهاڙي آهيان،
ڍڪيين ڍڪڻهار، ڏيئي پاند پناهہ جو."

Vai

Since yesterday, seeking in the rocks, my eyes have not slept.

مون کي ننڊ نہ نيڻين نيٺين
ڪالهون پوءِ لکن ۾،

Return home Mother dear! suffer not so, for my sake,

Though much I desire, my love takes me not with himself.

Today more than yesterday, I feel weak and languish,

All others are with their husbands, I alone am butt of insults.

Like pomegranate flowers' juice my hearts blood, my eyes shed,

Lord! may you unite me with my love, Latif says.

موٽ تون آيل! منهنجي ماءُ! تان تو لڳ نہ ڪيٽين ڪيٽين.
هو نہ نينهن پاڻ سين، آئون جا ويندڙي سيٽين سيٽين.
ڪالهوٽيان اڄ گهٽي جهوريڙي جهيٽين جهيٽين.
ٻيون سڀ واڪيون ون سين، آنءُ جا واڪڙي ويٺين ويٺين.
هنڌڙو ڏاڍهون گل جيئن، روئي رڙڙو نيڻن نيٽين.
"الا!" عبداللطيف چئي، "محب اسان نون ميڙين ميڙين"!

Section III

1

Beloved, come once to my humble hut,

Shelter me with your garments edge, loved one.

ڪرڪو پيرو ڪانڌ! مون نماڻيءَ جي نجهري،
پرين تنهنجي پاند، ڏوليا! ڍڪي آهيان.

2

If you are with me, never will I needy be,

You alone can repair my hut, its roof is worn out, see.

جئن تون قائم، ڪانڌ! تيئن آئون ورا ولهي نہ ٽيان،
پکي ڇنا پاند، ڳند نہ ڇاڻي ڪو ٻيو.

3

Others too have their loves, my love is all grace,

He sees my faults, yet covers them with His garments's edge.

ڪانڌ ٻين ڪيترا، مون ور وڏي ڪاند،
پاڻا ڍڪي پاند، جي ڏسي ڏوهه اڪين سين.

4

You do not treat your consort well, with others you joke and laugh,

Foolish woman, you ignore the grain and collect the chaff.

"ور سين وجهيو ڪاڻ، ڪر سين ملڻ پائيين،
"پوري منڌ اڃاڻ! ڪڻ ڇڏيو، تهه ميڙيين."

5

Sleeper awake arise, sleep not so,

Royal Beloved you cannot achieve by sleeping more.

ستا اٿي جاڳ، ننڊ نہ ڪجي ايتري،
سلطاني سهاڳ، ننڊن ڪندي نہ ٽئي.

6

Sleep at times, keep awake at times, excessive sleep

ڪي سمهه ڪي جاڳ، ننڊ نہ ڪجي ايتري،

avoid,

This world that you consider a permanent abode,
is afternoon's resort.

ايءَ مانجهانديَ جو ماڳ، جو تو ساڻيهه پائئيو.

7

Brother! blessed are those that keep awake,
From their heart for rust's removals sake.
Young man, rise at dawn, prepare to pray.

"جاڳڻ منجهان جس، آهي ادا! تنهن کي."
"لاهي جو" لطيف چئي، "مٽان قلب ڪس."
"ورنه! ڪجاڻءِ، وس، صبح ساڻ" سيد چئي.

8

Oh simpleton! few are the nights, you spend on earth,

Many more are those that you have to spend alone, under it.

"هي تان ٿورڙيون، جي تون پورا! پسي پلئين."
"راتيون ٻيون گهڻيون، جي تو ايندين هيڪلين."

9

Friends, sleep has brought me much misery,
For it brought separation between my love and me.

سمهڻان ساڙو، جيڏيون! جيڏوئي ٿيو،
پرين سين پاڙو، منهنجو ننڍ نبيريو.

10

Dawn appears, night has passed, stars are dimmed,
Much you will lament, oh lost foolish one!

پره ڦٽي، رات گئي، جهيڙا ٽيا نڪٽ،
"هاري! ويڙهءِ، وٽ، گهٽا هٽندي هٽڙا."

11

The drops you see at dawn oh man! are not dew,
Night sheds tears, seeing the suffering one's rue.

پيئي جا پرپات، ساماڪ مَ پسو ماڙهو!
روئي ڇڙي رات، ڏسي ڏکوين کي.

12

Beloved, slacken not thy ties with humble me,
In secret, do I make entreaties for winning thee.

ڊول مٿي ڪٽي ٻانهڙي، ڪرين ڪير نه چکيو،
آئون پنهنجو ڪانڊ، لوڪان لکي رانئيان.

13

Beguiled ones not tasting milk, preferred its froth,
They lost the hereafter, for this world's joy

ڦريا پسي ڦيڻ ڪرين ڪير نه چکيو،
دنيا ڪاڻ دين، ويجائي ولها ٽيا.

Section IV

1

In the mountains the departing cranes are chattering,

Last night they came to this decision after much commotion creating

روهه راماڻا ڪن، اڄ پڻ هلڻ هاريون،
ڪرڱل ڪونجڙين، رائي مٿ رات ڪيو.

2

The lone crane left behind, longs for waters and its flock,

Remembering its dear ones, she suffers with a distressed heart.

وڳر اُڪيري، سُر ساريو، سور چري،
جهري جهجندي ڏئي، سنيها ڪي سڃڻين.

3

Oh my crane! how did you from flock detach yourself?

Does not the memory of loved ones' sweet talk make you sad?

"وڳر وساري، وينين ڪيئن ماڻ ڪري،"
"ڪ تو نہ ماري، رڻ جهڙ سندي سڃڻين."

4

Oh my crane! yesterday your flock left,

What will you do in the lake without them?

"وڳر ويا وهي، ڪالهه تنهنجا ڪونجڙي!"
"ڪندينءَ ڪوه رهي، سر ۾ سپرين ريءَ؟"

5

In flocks they always fly, never connections break,

There is more love in birds than in living men.

وڳر ڪيو وتن، پرت نہ ڇنن پاڻ ۾،
پسو پکيڙن، ماڙهنڙان ميٺ گهٽو.

6

Oh my crane ! do not warble, revive not my heart's wounds,

How long can separated ones remain in their rooms?

مَ لنئن ڪونجي! ماڻ ڪر، چورمَ هيئن چاڪ،
ڦٽيون جي فراق، سي گهر گهارينديون ڪيترو

7

Crane's warbling, within me my love's memory refreshed,

He without whom my days in misery I spend.

ڪونجڙيءَ ڪالهه لنئين، سڃڻ وڏ مر چت،
آئون جنهن ريءَ هت، گهنگهر گهاريان ڏينهڙا.

8

Turning to north the crane produces sweet strains,

For she about her loved one has dreamt.

اُتر ڏي آلاپ، ڪالهان ڪر ڪونج ڪري،
پرين پسي منجهه خواب، وهاڻيءَ وايون ڪري.

9

Cranes cry out, per chance they are about to leave,

They leave their young ones behind, hence their sadness deep.

ڪونجيون ٽيون ڪڪن، جيڪر هلڻ هارون،
ٻچا پوءِ اٿن، ويجن وانڌا ڪنديون.

10

Cranes landed to collect young ones' feed,

آيون ڏور ڏري، اصل سندي آسري،

They found the ground hard, it hurt their feet.

كنيڙ پونءِ ڪري، پاٽا پير ڏکو يا پکڙين.

11

Crane perceived not hunters' arrow aimed at it,
By it's sudden shot, the flock got scattered.

ڪونج نہ لکيو هاڻ، جو ماريءَ سندي من ۾،
اوچتي پرياڻ، وگر هٽي ويچون ڪيا.

12

Crane see you not the straw that camouflages the hunter's trap?
So many he has killed, scattering their covoys.

ڪونج نہ پسين ڪک، ڏهه جنهن سين ڏهيو،
ماريءَ ماري لک، وگر هٽي ويچون ڪيا.

13

Hunter, may you die, may your hunting tools be blasted,
For yesterday the loving pair you separated.

"ماري مرين شال! ڏهَ وڃنئين ڏهيون،
جيئن تون اڇي ڪال، وڏو وڇ ورهن ڪي.

14

Mother, who can compete with the cattle owners generosity?
On every Friday night they display much charity.

"ڪير ڪريندي ريس، آيل! سنگهار سين؟"
جنين جي خميس، واريون واري ڇڏيون.

15

May those cattle owners live long who us protect,
Those who in difficult days are our help.

جين سين سنگهار، اجهي جن گهاريان!
مان لهنئون سار، وچ ويهين ڏينهڙين.

16

If you desire to live in shady place, depart with cattle owners,
That way you may never complain of any losses.

جي پائئين وس چران، تہ سنگهارن سين لڏ،
تہ هاڃي سندي هڏ، ڪوڪ نہ سڻين ڪڏهين.

17

May the churn staff in pots noisily twist and turn,
In cattle owners' residence, guests are ever welcome.

منڊيون مٿ گڙن، جهوڪ بہ سونهن پهيڙا،
سندي سنگهارن، جوءِ جياري جڏڙين.

18

Awake, Jareja of Samo tribe, sleep not unaware,
To attack your side, Lakho dacoit is prepared.

جاڳو، جاڙيجا! سما! سُک مَ سمهو،
پسو آن پاريا، لاکو ٿو لوڙيون ڪري.

19

Their saddles for ever tied tight, their horses clean and brushed,

ٽاٽونکين پلاڻ، سدا هٽن ڪرکرا،
لاکي لوڙائن جا، اهڙائي اهجاڻ،

Such are the signs of Lakho the dacoit,

Spurring their horses, they will create havoc in Kuchh.

ڏيئي تنگن تاڙ، ڪوڪ ڪاريندا ڪڇڙي.

20

Oh! herdswoman, with your entreaties Lakho dislodge,

That the brave rider may pity you and not you rob.

ريبارڙ! ريجهاءِ، لاکو لولاڻن سين،
سائو مان سنڌياءِ، ٽڪ متائي ٽاکرو.

21

Many Lakhas there be but like Lakho Phulwani there be none,

Rajas and princes tremble in their forts because of him,

Jarejas even[4] in sleep cannot cast off fear.

لاکا لک سڃڻ، ڦلاڻي پير ٻيو،
جنهن پر راڻا، راڃڻا، ڪوٽن منجهه ڪنبن،
جنهن جو ڃاڙيجن، ستي سڃو نه لهي.

22

Lakho rides Lakhi his own marc,

Seizes beautiful women, resisting their return with dare,

Tomorrow with all of them he will be stern.

لاکو لکيءَ تي چڙهي، لکي لاکي هيٺ،
سونهاريون سرکيو، پيريو ٻڌي بيٺ،
ڪند وڏمر ڏيٺ، صباح ساڻ سيکهين.

rounded by hermitages, in one of which lived Chrysostom. It seemed as if Eloquence had recovered her element, freedom, from the fount of nature in the mountain regions of Syria and Asia Minor, which were then covered with forests.

But in those subsequent ages—so inimical to intellectual culture—when Christianity was diffused among the Germanic and Celtic nations, who had previously been devoted to the worship of nature, and had honored under rough symbols its preserving and destroying powers, intimate intercourse with nature, and a study of its phenomena were gradually considered suspicious incentives to witchcraft. This communion with nature was regarded in the same light as Tertullian, Clement of Alexandria, and almost all the older fathers of the Church, had considered the pursuit of the plastic arts. In the twelfth and thirteenth centuries, the Councils of Tours (1163) and of Paris (1209) interdicted to monks the sinful reading of works on physics.* Albertus Magnus and Roger Bacon were the first who boldly rent asunder these fetters of the intellect, and thus, as it were, absolved Nature, and restored her to her ancient rights.

We have hitherto depicted the contrasts manifested according to the different periods of time in the closely allied literature of the Greeks and Romans. But differences in the mode of thought are not limited to those which must be ascribed to the age alone, that is to say, to passing events which are constantly modified by changes in the form of government, social manners, and religious belief; for the most striking differences are those generated by varieties of races and of intellectual development. How different are the manifestations of an animated love for nature and a poetic coloring of natural descriptions among the nations of Hellenic, Northern Germanic, Semitic, Persian, or Indian descent! The opinion has been re-

collect descriptions of nature; but I am indebted to my friend and colleague H. Hase, Member of the Institute, and Conservator of the King's Library at Paris, for all the admirable translations of Chrysostom and Thallasius that I have already given.

* On the *Concilium Turonense*, under Pope Alexander III., see Ziegelbauer, *Hist. Rei Litter. ordinis S. Benedicti*, t. ii., p. 248, ed. 1754; and on the Council at Paris in 1209, and the Bull of Gregory IX., from the year 1231, see Jourdain, *Recherches Crit. sur les Traductions d'Aristote*, 1819, p. 204–206. The perusal of the physical works of Aristotle was forbidden under penalty of severe penance. In the *Concilium Lateranense* of 1139, *Sacror. Concil. nova Collectio*, ed. Ven., 1776, t. xxi., p. 528, the practice of medicine was interdicted to monks. See, on this subject, the learned and agreeable work of the young Wolfgang von Göthe, *Der Mensch und die Elementarische Natur*, 1844, s. 10

peatedly expressed, that the love of nature evinced by northern nations is to be referred to an innate longing for the pleasant fields of Italy and Greece, and for the wonderful luxurianee of tropieal vegetation, when eontrasted with their own prolonged deprivation of the enjoyment of nature during the dreary season of winter. We do not deny that this longing for the land of palms diminishes as we approaeh Southern Franee or the Spanish peninsula, but the now generally adopted and ethnologieally eorreet term of *Indo-Germanic* nations should remind us that too general an influenee ought not to be ascribed to northern winters. The luxuriant poetie literature of the Indians teaches us that within and near the tropies, south of the ehain of the Himalaya, ever-verdant and ever-blooming forests have at all times powerfully exeited the imaginations of the East Arian nations, and that they have always been more inclined toward poetie delineations of nature than the true Germanie raees who have spread themselves over the inhospitable north as far as Iceland. The happier climates of Southern Asia are not, however, exempt from a eertain deprivation, or, at least, an interruption of the enjoyment of nature; for the seasons are abruptly divided from eaeh other by an alternation of fruetifying rain and arid destruetive drought. In the West Arian plateaux of Persia, the barren wilderness penetrates in many parts in the form of bays into the surrounding highly fruitful lands. A margin of forest land often eonstitutes the boundary of these far-extending seas of steppe in Central and Western Asia. In this manner the relations of the soil present the inhabitants of these torrid regions with the same eontrast of barrenness and vegetable abundanee in a horizontal plane as is manifested in a vertieal direetion by the snow-eovered mountain ehains of India and of Afghanistan. Great eontrasts in seasons, vegetation, and elevation are always found to be exeiting elements of poetic faney, where an animated love for the eontemplation of nature is elosely interwoven with the mental eulture and the religious aspirations of a people.

Pleasure in the eontemplation of nature, whieh is eonsonant with the eharaeteristie bent of mind of the Germanie nations, is in the highest degree apparent in the earliest poems of the Middle Ages, as may be proved by many examples from the chivalrie poetry of the Minnesingers, in the period of the Hohenstauffen dynasty. However numerous may be the historieal points of eontact eonnecting it with the romanesque songs of the Provençals, we can not overlook the genuine Germanie

spirit every where breathing through it. A deep and all-pervading enjoyment of nature breathes through the manners and social arrangements of the Germanic races, and through the very spirit of freedom by which they are characterized.* Although moving and often born in courtly circles, the wandering Minnesingers never relinquished the habit of communing with nature. It was thus that their productions were often marked by a fresh, idyllic, and even elegiac tone of feeling. In order to form a just appreciation of the result of such a disposition of mind, I avail myself of the labors of my valued friends Jacob and Wilhelm Grimm, who have so profoundly investigated the literature of our German middle ages. "Our national poets during that age," writes the latter of the two brother inquirers, "have never devoted themselves to a description of nature, having no object but that of conveying to the imagination a glowing picture of the scene. A love of nature was assuredly not wanting to the ancient German Minnesingers, although they have left us no other expression of the feeling than what was evolved in lyric poems from their connection with historical events, or from the sentiments appertaining to the subject of which they treated. If we begin with the oldest and most remarkable monuments of the popular Epos, we shall find that neither the *Niebelungen* nor *Gudrun*† contain any description of natural scenery, even where the occasion seems specially to prompt its introduction. In the otherwise circumstantial description of the hunt, during which Siegfried was murdered, the flowering heath and the cool spring under the linden are only casually touched upon. In *Gudrun*, which evinces to a certain extent a more delicate finish, the feeling for nature is somewhat more apparent. When the king's daughter and her attendants, reduced to a condition of slavery, are carrying the garments of their cruel masters to the sea-shore, the time is indicated, when the winter is just melting away, and the song of rival birds has already begun. Snow and rain are falling, and the hair of the

* Fried. Schlegel, *Ueber nordische Dichtkunst*, in his *Sämmtliche Werke*, bd. x., s. 71 and 90. I may further cite, from the very early times of Charlemagne, the poetic description of the *Thiergarten* at Aix, inclosing both woods and meadows, and which occurs in the life of the great emperor, by Angilbertus, abbot of St. Riques. (See Pertz, *Monum.*, vol. i., p. 393–403.)

† See the comparison of the two epics, the poem of the Niebelungen (describing the vengeance of Chriemhild, the wife of Siegfried), and that of Gudrun, the daughter of King Hetel, in Gervinus, *Geschichte der Deutschen Litt.*, bd. i., s. 354–381.

maidens is disheveled by the rough winds of March. As Gudrun, hoping for the arrival of her liberators, is leaving her couch, and the sea begins to shine in the light of the rising morning star, she distinguishes the dark helmets and shields of her friends. This description is conveyed in but few words, but it calls before the mind a visible picture, and heightens the feeling of suspense preceding the occurrence of an important historical event. Homer, in a similar manner, depicts the island of the Cyclops and the well-ordered gardens of Alcinoüs, in order to produce a visible picture of the luxuriant profusion of the wilderness in which the giant monsters dwell, and of the splendid abode of a powerful king. Neither of the poets purposes to give an individual delineation of nature."

"The rugged simplicity of the popular epic contrasts strongly with the richly-varied narratives of the chivalric poets of the thirteenth century, who all exhibited a certain degree of artistical skill, although Hartmann von Aue, Wolfram von Eschenbach, and Gotfried von Strasburg* were so much distinguished above the rest in the beginning of the century, that they may be called great and classical. It would be easy to collect examples of a profound love of nature from their comprehensive works, as it occasionally breaks forth in similitudes; but the idea of giving an independent delineation of nature does not appear to have occurred to them. They never arrested the plot of the story to pause and contemplate the tranquil life of nature. How different are the more modern poetic compositions! Bernardin de St. Pierre makes use of events merely as frames for his pictures. The lyric poets of the thirteenth century, when they sang of *Minne* or love, which they did not, however, invariably choose as their theme, often speak of the genial month of May, of the song of the nightingale, or of the drops of dew glittering on the flowers of the heath, but these expressions are always used solely with reference to the feelings which they are intended to reflect. In like manner, when emotions of sadness are to be delineated, allusion is made to the sear and yellow leaf, the songless birds, and the seed buried beneath the snow. These thoughts recur incessantly, although not without gracefulness and diversity of expression. The tender Walther von der Vogelweide and the meditative Wolfram von Eschenbach, of whose poems we unfortunately possess but a few lyrical songs, may be adduced as brilliant examples of the cultivators of this species of writing."

* On the romantic description of the grotto of the lovers, in the *Tristan* of Gotfried of Strasburg, see Gervinus, op. cit., bd. i., s. 450.

"The question, whether contact with Southern Italy, or the intercourse opened by means of the crusades with Asia Minor, Syria, and Palestine, may not have enriched Germanic poetry with new images of natural scenery, must be answered generally in the negative, for we do not find that an acquaintance with the East gave any different direction to the productions of the Minnesingers. The Crusaders had little connection with the Saracens, and differences ever reigned among the various nations who were fighting for one common cause. One of the most ancient of the lyric poets was Friedrich von Hausen, who perished in the army of Barbarossa. His songs contain many allusions to the Crusades, but they simply express religious views, or the pain of being separated from the beloved of his heart. Neither he, nor any of those who took part in the crusades, as Reinmar the elder, Rubin, Neidhardt, and Ulrich von Lichtenstein, ever take occasion to speak of the country surrounding them. Reinmar came to Syria as a pilgrim, and, as it would appear, in the retinue of Duke Leopold VI. of Austria. He laments that he can not shake off the thoughts of home, which draw his mind away from God. The date-tree is occasionally mentioned when reference is made to the palm-branches which the pilgrims should bear on their shoulders. I do not remember an instance in which the noble scenery of Italy seems to have excited the imaginative fancy of the Minnesingers who crossed the Alps. Walther von der Vogelweide, who had made distant travels, had, however, not journeyed further into Italy than to the Po; but Freidank* had been in Rome, and yet he merely remarks that grass grows on the palaces of those who once held sway there."

The German *Animal Epos*, which must not be confounded with the "animal fables" of the East, has arisen from a habit of social familiarity with animals, and not from any special purpose of giving a representation of them. This kind of epos, of which Jacob Grimm has treated in so masterly a

* *Vridankes Bescheidenheit*, by Wilhelm Grimm, 1834, s. l. and cxxviii I have taken all that refers to the German national Epos and the Min nesingers from a letter of Wilhelm Grimm to myself, dated October, 1845. In a very old Anglo-Saxon poem on the names of the Runes, first made known by Hickes, we find the following characteristic description of the birch-tree: "Beorc is beautiful in its branches: it rustles sweetly in its leafy summit, moved to and fro by the breath of heaven." The greeting of the day is simple and noble: "The day is the messenger of the Lord, dear to man, the glorious light of God, a joy and trusting comfort to rich and poor, beneficent to all!" See, also, Wilhelm Grimm, *Ueber Deutsche Runen*, 1821, s. 94, 225, and 234.

manner in the introduction to his edition of Reinhart Fuchs, manifests a genuine delight in nature. The animals, not chained to the ground, passionately excited, and supposed to be gifted with voice, form a striking contrast with the still life of the silent plants, and constitute the ever-animated principle of the landscape. "Ancient poetry delights in considering natural life with human eyes, and thus lends to animals, and sometimes even to plants, the senses and emotions of human beings, giving at the same time a fantastic and child-like interpretation of all that had been observed in their forms and habits. Herbs and flowers that may have been gathered and used by gods and heroes are henceforward named after them. It seems, on reading the German *Animal Epos*, as if the fragrance of some ancient forest were wafted from its pages."*

We might formerly have been disposed to number among the memorials of the Germanic poetry of natural scenery the remains of the Celto-Irish poems, which for half a century flitted like vapory forms from nation to nation under the name of Ossian; but the charm has vanished since the literary fraud of the talented Macpherson has been discovered by his publication of the fictitious Gaelic original text, which was a mere retranslation of the English work. There are undoubtedly ancient Irish Fingal songs, designated as Finnian, which do not date prior to the age of Christianity, and, probably, not even from so remote a period as the eighth century; but these popular songs contain little of that sentimental delineation of nature which imparted so powerful a charm to the productions of Macpherson.†

We have already observed that, although sentimental and romantic excitement of feeling may be considered as in a high degree characteristic of the Indo-Germanic races of Northern Europe, it can not be alone referred to climate, or, in other words, to a longing, increased by protracted deprivation. We have already remarked how the literature of the Indians and Persians, which has been developed under the genial glow of southern climes, presents the most charming descriptions, not

* Jacob Grimm, in *Reinhart Fuchs*, 1834, s. ccxciv. (Compare, also, Christian Lassen, in his *Indische Alterthumskunde*, bd. i., 1843, s. 296.)

† (*Die Unächtheit der Lieder Ossian's und des Macpherson'schen Ossian's insbesondere, von Talvj*, 1840.) The first publication of Ossian by Macpherson was in 1760. The Finnian songs are, indeed, heard in the Scottish Highlands as well as in Ireland, but they have been carried, according to O'Reilly and Drummond, from the latter country to Scotland.

only of organic, but of inanimate nature; of the transition from drought to tropical rain; of the appearance of the first cloud on the deep azure of the pure sky, when the long-desired Etesian winds are first heard to rustle amid the feathery foliage of the lofty palms.

The present would appear a fitting place to enter somewhat further into the domain of Indian delineations of nature. "If we suppose," writes Lassen, in his admirable work on Indian antiquity,* "that a part of the Arian race emigrated to India from their native region in the northwestern portion of the continent, they would have found themselves surrounded by a wholly unknown and marvelously luxuriant vegetation. The mildness of the climate, the fruitfulness of the soil, and its rich and spontaneous products, must have imparted a brighter coloring to the new life opened before them. Owing to the originally noble characteristics of the Arian race, and the possession of superior mental endowments, in which lay the germ of all the nobleness and greatness to which the Indians have attained, the aspect of external nature gave rise in the minds of these nations to a deep meditation on the forces of nature, which has proved the means of inducing that contemplative tendency which we find so intimately interwoven in the most ancient poetry of the Indians. The all-powerful impression thus produced on the minds of the people is most clearly manifested in the fundamental dogma of their belief—the recognition of the divine in nature. The freedom from care, and the ease of supporting existence in such a climate, were also conducive to the same contemplative tendency. Who could devote themselves with less hinderance to a profound meditation of earthly life, of the condition of man after death, and of the divine essence, than the anchorites, dwelling amid forests,† the Brahmins of India, whose ancient schools consti-

* Lassen, *Ind. Alterthumskunde*, bd. i., s. 412–415.

† Respecting the Indian forest-hermits, Vanaprestiæ (Sylvicolæ) and Sramâni (a name which has been altered into Sarmani and Germani), see Lassen, "*de nominibus quibus veteribus appellantur Indorum philosophi*," in the *Rhein. Museum für Philologie*, 1833, s. 178–180. Wilhelm Grimm recognizes something of Indian coloring in the description of the magic forest by a priest named Lambrecht, in the *Song of Alexander*, composed more than 1200 years ago, in immediato imitation of a French original. The hero comes to a wonderful wood, where maidens, adorned with supernatural charms, spring from large flowers. He remains so long with them that both flowers and maidens fade away. (Compare Gervinus, bd. i., s. 282, and Massmann's *Denkmäler*, bd. i., s. 16.) These are the same as the maidens of Edrisi's Eastern magic island of Vacvac, called in the Latin version of the *Masudi Chothbeddin*,

tute one of the most remarkable phenomena of Indian life, and must have exercised a special influence on the mental development of the whole race?"

In referring here, as I did in my public lectures, under the guidance of my brother and other learned Sanscrit scholars, to individual instances of that animated and frequently-expressed feeling for nature which breathes through the descriptive portions of Indian poetry, I would begin with the *Vedas*, the most ancient and most valuable memorials of the civilization of the East Arian nations. The main subject of these writings is the veneration and praise of nature. The hymns of the *Rig-Veda* contain the most charming descriptions of the "roseate hue of early dawn," and of the aspect of the "golden-handed sun." The great heroic poems of Ramayana and Mahabharata are of more recent date than the Vedas, but more ancient than the Puranas; the adoration of nature being associated with the narrative in accordance with the character of epic creations. In the Vedas, the locality of the scenes which had been glorified by holy beings was seldom indicated, but in the heroic poems the descriptions of nature are mostly individual, and refer to definite localities, from whence they derive that animation and life which is ever imparted when the writer draws his materials from the impressions he has himself experienced. There is a rich tone of coloring throughout the description of the journey of Rama from Ayodhya to the residence of Dschanaka, in his life in the primitive forest, and in the picture of the anchorite life of the Panduides.

The name of Kalidasa was early and widely known among the Western nations. This great poet flourished in the highly-cultivated court of Vikramaditya, and was consequently the cotemporary of Virgil and Horace. The English and German translations of the Sacontala have added to the admiration which has been so freely yielded to this poet,* whose tender-

puellas Vasvakienses (Humboldt, *Examen Crit. de la Géographie*, t. i., p. 53).

* Kalidasa lived at the court of Vikramaditya about fifty-six years before our era. It is highly probable that the age of the two great heroic poems, *Ramayana* and *Mahabharata*, is much more ancient than that of the appearance of Buddha, that is to say, prior to the middle of the sixth century before Christ. (Burnouf, *Bhagavata-Purana*, t. i., p. cxi. and cxviii.; Lassen, *Ind. Alterthumskunde*, bd. i., s. 356 and 492.) George Forster, by the translation of *Sakuntala*, *i. e.*, by his elegant German translation of the English version of Sir William Jones (1791), contributed very considerably to the enthusiasm for Indian poetry

ness of feeling and richness of creative fancy entitle him to a high place in the ranks of the poets of all nations. The charm of his descriptions of nature is strikingly exemplified in the beautiful drama of *Vikrama and Urvasi*, where the king wanders through the thickets of the forest in search of the nymph Urvasi; in the poem of *The Seasons;* and in that of *The Messenger of Clouds* (*Meghaduta*). This last poem describes with admirable truth to nature the joy with which, after long drought, the first appearance of a rising cloud is hailed as the harbinger of the approaching season of rain. The expression, "truth to nature," of which I have just made use, can alone justify me in referring, in connection with the Indian poem of *The Messenger of the Clouds*, to a picture of the beginning of the rainy season, which I sketched* in South America, at a period when Kalidasa's *Meghaduta* was not known to me even through the translation of Chézy. The mysterious meteorological processes which take place in the atmosphere in the formation of vapors, in the form of the clouds, and in the luminous electric phenomena, are the same between the tropics in both continents; and the idealizing art, whose province it is to exalt reality into a picture, will lose none of its charm from the fact that the analyzing spirit of observation of a later age may have succeeded in confirming the truthfulness of an ancient and simply graphic delineation.

We now turn from the East Arians or Brahminical Indians, and the marked bent of their minds toward the contemplation of the picturesque beauties of nature,† to the West

which then first showed itself in Germany. I take pleasure in recalling some admirable lines of Göthe's, which appeared in 1792:

"Willst du die Blüthe des frühen, die Früchte des späteren Jahres,
Willst du was reizt und entzückt, willst du, was sättigt und nährt.
Willst du den Himmel, die Erde mit einem Namen begreifen;
Nenn' ich Sakontala, Dich, und so ist alles gesagt."

The most recent German translation of this Indian drama is that by Otto Böhtlingk (Bonn, 1842), from the important original text discovered by Brockhaus.

* Humboldt (*Ueber Steppen und Wüsten*), in the *Ansichten der Natur*, 2te Ausgabe, 1826, bd. i., s. 33–37.

† In order to render more complete the small portion of the text which belongs to Indian literature, and to enable me (as I did before with relation to Greek and Roman literature) to indicate the different works referred to, I will here introduce some notices on the more general consideration of the love of nature evinced by Indian writers, and kindly communicated to me in manuscript by Herr Theodor Goldstücker, a distinguished and philosophical scholar thoroughly versed in Indian poetry:

"Among all the influences affecting the intellectual development of

Arians or Persians, who had separated in different parts of the Northern Zend, and who were originally disposed to com-

the Indian nation, the first and most important appears to me to have been that which was exercised by the rich aspect of the country. A deep sentiment for nature has at all times been a fundamental characteristic of the Indian mind. Three successive epochs may be pointed out in which this feeling has manifested itself. Each of these has its determined character deeply implanted in the mode of life and tendencies of the people. A few examples may therefore suffice to indicate the activity of the Indian imagination, which has been evinced for nearly three thousand years. The first epoch of the expression of a vivid feeling for nature is manifested in the Vedas; and here we would refer in the *Rig-Veda* to the sublime and simple descriptions of the dawn of day (*Rig-Veda-Sanhitâ*, ed. Roseu, 1838, Hymn xlvi., p. 88; Hymn xlviii., p. 92; Hymn xcii., p. 184; Hymu cxiii., p. 233: see, also, Höfer, *Ind. Gedichte*, 1841, Lese i., s. 3) and of 'the golden-handed sun' (*Rig-Veda-Sanhitâ*, Hymn xxii., p. 31; Hymn xxxv., p. 65). The adoration of nature which was connected here, as in other nations, with an early stage of the religious belief, has in the Vedas a peculiar significance, and is always brought into the most intimate connection with the external and internal life of man. The second epoch is very different. In it a popular mythology was formed, and its object was to mold the sagas contained in the Vedas into a shape more easily comprehended by an age far removed in character from that which had gone by, and to associate them with historical events which were elevated to the domain of mythology. The two great heroic poems, the *Ramayana* and the *Mahabharata*, belong to this second epoch. The last-named poem had also the additional object of renderiug the Brahmins the most influential of the four ancient Indian castes. The *Ramayana* is therefore the more beautiful poem of the two: it is richer in natural feeling, and has kept within the domain of poetry, not having been obliged to take up elements alien and almost hostile to it. In both poems, nature does not, as in the Vedas, constitute the whole picture, but only a part of it. Two points essentially distinguish the conception of nature at the period of the heroic poems from that which the Vedas exhibit, without reference to the difference which separates the language of adoration from that of narrative. One of these points is the localization of the descriptions, as, for instance, according to Wilhelm von Schlegel, in the first book of the *Ramayana* or *Balakanda*, and in the second book, or *Ayodhyakanda*. See, also, on the differences between these two great epics, Lassen, *Ind. Alterthumskunde*, bd. i., s. 482. The next point, closely connected with the first, refers to the subject which has enriched the natural description. Mythical narration, especially when of a historical character, necessarily gave rise to greater distinctness and localization in the description of nature. All the writers of great epics, whether it be Valmiki, who sings the deeds of Rama, or the authors of the *Mahabharata*, who collected the national traditions under the collective title of Vyasa, show themselves overpowered, as it were, by emotions connected with their descriptions of external nature. Rama's journey from Ayodhya to Dschanaka's capital, his life in the forest, his expedition to Lanka (Ceylon), where the savage Ravana, the robber of his bride, Sita, dwells, and the hermit life of the Panduides, furnish the poet with the opportunity of following the original bent of the Indian mind, and of blending with the narration of he-

bine a spiritualized adoration of nature with the dualistic belief in Ahrimanes and Ormuzd. What we usually term Per-

roic deeds the rich pictures of a luxuriant nature. (*Ramayana*, ed. Schlegel, lib. i., cap. 26, v. 13–15; lib. ii., cap. 56, v. 6–11: compare Nalus, ed. Bopp, 1832, *Ges.*, xii., v. 1–10.) Another point in which the second epoch differs from that of the Vedas in regard to the feeling for external nature is in the greater richness of the subject treated of, which is not, like the first, limited to the phenomena of the heavenly powers, but comprehends the whole of nature—the heavens and the earth, with the world of plants and of animals, in all its luxuriance and variety, and in its influence on the mind of men. In the third epoch of the poetic literature of India, if we except the *Puranas*, which have the particular object of developing the religious principle in the minds of the different sects, external nature exercises undivided sway, but the descriptive portion of the poems is based on scientific and local observation. By way of specifying some of the great poems belonging to this epoch, we will mention the *Bhatti-kâvya* (or Bhatti's poem), which, like the *Ramayana*, has for its subject the exploits and adventures of Rama, and in which there occur successively several admirable descriptions of a forest life during a term of banishment, of the sea and of its beautiful shores, and of the breaking of the day in Ceylon (Lanka). (*Bhatti-kâvya*, ed. Calc., Part i., canto vii., p. 432; canto x., p. 715; canto xi., p. 814. Compare, also, *Fünf Gesänge des Bhatti-kâvya*, 1837, s. 1–18, by Professor Schütz of Bielefeld; the agreeable description of the different periods of the day in Magha's *Sisupalabdha*, and the *Naischada-tscharita* of Sri Harscha, where, however, in the story of Nalus and Damayanti, the expression of the feeling for external nature passes into a vague exaggeration. This extravagance contrasts with the noble simplicity of the *Ramayana*, as, for instance, where Visvamitra is described as leading his pupil to the shores of the Sona. (*Sisupaladha*, ed. Calc., p. 298 and 372. Compare Schütz, op. cit., s. 25–28; *Naischada-tscharita*, ed. Calc., Part i., v. 77–129; and *Ramayana*, ed. Schlegel, lib. i., cap. 35, v. 15–18.) Kalidasa, the celebrated author of *Sakuntala*, has a masterly manner of representing the influence which the aspect of nature exercises on the minds and feelings of lovers. The forest scene which he has portrayed in the drama of *Vikrama and Urvasi* may rank among the finest poetic creations of any period. (*Vikramorvasi*, ed. Calc., 1830, p. 71; see the translation in Wilson's *Select Specimens of the Theater of the Hindus*, Calc., 1827, vol. ii., p. 63.) Particular reference should be made in the poem of *The Seasons* to the passages referring to the rainy season and to spring. (*Ritusanhâra*, ed. Bohlen, 1840, p. 11–18 and 37–45, and s. 80–88, 107–114 of Bohlen's translation.) In the *Messenger of Clouds*, likewise the work of Kalidasa, the influence of external nature on the feelings of men is also the leading subject of the composition. This poem (the *Meghaduta*, or Messenger of Clouds, which has been edited by Gildemeister and Wilson, and translated both by Wilson and by Chézy) describes the grief of an exile on the mountain Ramagiri. In his longing for the presence of his beloved, from whom he is separated, he entreats a passing cloud to convey to her tidings of his sorrows, and describes to the cloud the path which it must pursue, depicting the landscape as it would be reflected in a mind agitated with deep emotion. Among the treasures which the Indian poetry of the third period owes to the influence of nature on the national mind, the highest praise must be awarded to the

sian literature does not go further back than the time of the Sassanides; the most ancient monuments of their poetry have perished. It was not until the country had been subjugated by the Arabs, and had lost its original characteristics, that it again acquired a national literature among the Samanides, Gaznevides, and Seldschukes. The flourishing period of their poetry, extending from Firdusi to Hafiz and Dschami, scarcely lasted more than four or five hundred years, and hardly reaches to the time of the voyage of Vasco de Gama. We must not forget, in seeking to trace the love of nature evinced by the Indians and Persians, that these nations, if we judge according to the amount of cultivation by which they are respectively characterized, appear to be separated alike by time and space. Persian literature belongs to the Middle Ages, while the great literature of India appertains in the strictest sense to antiquity.

In the Iranian elevated plateaux nature has not the same luxuriance of arborescent vegetation, or the remarkable diversity of form and color, by which the soil of Hindostan is embellished. The chain of the Vindhya, which long continued to be the boundary line of the East Arian nations, falls within the tropical region, while the whole of Persia is situated beyond the tropics, and a portion of its poetry belongs even to the northern districts of Balkh and Fergana.

The four paradises celebrated by the Persian poets* were the pleasant valley of Soghd near Samarcand, Maschanrud near Hamadan, Scha'abi Bowan near Kal'eh Sofid in Fars, and Ghute, the plain of Damascus. Both Iran and Turan are wanting in woodland scenery, and also, therefore, in the hermit life of the forest, which exercised so powerful an influence on the imagination of the Indian poets. Gardens refreshed by cool springs, and filled with roses and fruit-trees, can form no substitute for the wild and grand natural scenery of Hindostan. It is no wonder, then, that the descriptive poetry of Persia was less fresh and animated, and that it was

Gitagovinda of Dschayadeva. (Rückert, in the *Zeitschrift für die Kunde des-Morgenlandes*, bd. i., 1837, s. 129–173; *Gitagovinda Jayadevæ poetæ indici drama lyricum*, ed. Chr. Lassen, 1836.) We possess a masterly rhythmical translation of this poem by Rückert, which is one of the most pleasing, and, at the same time, one of the most difficult in the whole literature of the Indians. The spirit of the original is rendered with admirable fidelity, while a vivid conception of nature animates every part of this great composition."

* Journal of the *Royal Geogr. Soc. of London*, vol. x., 1841, p. 2, 3; Rückert, *Makamen Hariri's*, s. 261.

often heavy and overcharged with artificial adornment. If, in accordance with the opinion of the Persians themselves, we award the highest praise to that which we may designate by the terms spirit and wit, we must limit our admiration to the productiveness of the Persian poets, and to the infinite diversity of forms imparted to the materials which they employ; depth and earnestness of feeling are wholly absent from their writings.*

Descriptions of natural scenery do but rarely interrupt the narrative in the historical or national Epos of Firdusi. It seems to me that there is much beauty and local truthfulness in the description of the mildness of the climate and the force of the vegetation, extolled in the praise of the coast-land of Mazanderan, which is put into the mouth of a wandering bard. The king, Kei Kawus, is represented as being excited by this praise to enter upon an expedition to the Caspian Sea, and even to attempt a new conquest.† The poems on Spring by Enweri, Dschelaleddin Rumi (who is esteemed the greatest mystic poet of the East), Adhad, and the half-Indian Feisi, generally breathe a tone of freshness and life, although a petty striving to play on words not unfrequently jars unpleasantly on the senses.‡ As Joseph von Hammer has remarked, in his great work on the history of Persian poetry, Sadi, in his *Bostan and Gulistan* (Fruit and Rose Gardens), may be regarded as indicating an age of ethical teaching, while Hafiz, whose joyous views of life have caused him to be compared to Horace, may be considered by his love-songs as the type of a high development of lyrical art; but that, in both, bombastic affectation too frequently mars the descriptions of nature.§ The darling subject of Persian poetry, the "loves of

* Göthe, in his *Commentar zum west-östlichen Divan*, bd. vi., 1828, s. 73, 78, and 111.

† See *Le Livre des Rois*, publié par Jules Mohl, t. i., 1838, p. 487.

‡ See Jos. von Hammer, *Gesch. der schönen Redekünste Persiens*, 1818, s. 96, concerning Ewhadeddin Enweri, who lived in the twelfth century, and in whose poem on the *Schedschai* a remarkable allusion has been discovered to the mutual attraction of the heavenly bodies; s. 183, concerning Dschelaleddin Rumi, the mystic; s. 259, concerning Dschelaleddin Ahdad; and s. 403, concerning Feisi, who stood forth at the court of Akbar as a defender of the religion of Brahma, and in whose *Ghazuls* there breathes an Indian tenderness of feeling.

§ "Night comes on when the ink-bottle of heaven is overturned," is the inelegant expression of Chodschah Abdulla Wassaf, a poet who has, however, the merit of having been the first to describe the great astronomical observatory of Meragha, with its lofty gnomon. Hilali, of Asterabad, makes the disk of the moon glow with heat, and regards

the nightingale and the rose," recurs with wearying frequency, and a genuine love of nature is lost in the East amid the artificial conventionalities of the language of flowers.

On passing northward from the Iranian plateaux through Turan (Tûirja* in the Zend) to the Uralian Mountains, which separate Europe and Asia, we arrive at the primitive seat of the Finnish race; for the Ural is as much a land of the ancient Fins as the Altai is of the ancient Turks. Among the Finnish tribes who have settled far to the west in the lowlands of Europe, Elias Lönnrot has collected from the lips of the Karelians, and the country people of Olonetz, a large number of Finnish songs, in which "there breathes," according to the expression of Jacob Grimm, "an animated love of nature rarely to be met with in any poetry but that of India."† An ancient Epos, containing nearly three thousand verses, treats of a fight between the Fins and Laps, and the fate of a demi-god named Vaino. It gives an interesting account of Finnish country life, especially in that portion of the work where Ilmarine, the wife of the smith, sends her flocks into the woods, and offers up prayers for their safety. Few races exhibit greater or more remarkable differences in mental cultivation, and in the direction of their feelings, according as they have been determined by the degeneration of servitude, warlike ferocity, or a continual striving for political freedom, than the Fins, who have been so variously subdivided, although retaining kindred languages. In evidence of this, we need only refer to the now peaceful population among whom the Epos above referred to was found; to the Huns, once celebrated for conquests that disturbed the then existing order of things, and who have long been confounded with the Monguls; and, lastly, to a great and noble people, the Magyars.

After having considered the extent to which intensity in the love of nature and animation in the mode of its expression may be ascribed to differences of race, to the peculiar influence of the configuration of the soil, the form of government, and the character of religious belief, it now remains for us to throw a glance over those nations of Asia who offer the

the evening dew as "the sweat of the moon." (Jos. von Hammer, s. 247 and 371.)

* Tûirja or Turan are names whose etymology is still unknown. Burnouf (*Yacna*, t. i., p. 427–430) has acutely called attention to the Bactrian satrapy of Turiua or Turiva, mentioned in Strabo (lib. xi., p. 517, Cas.). Du Theil and Groskurd would, however, substitute the reading of Tapyria. See the work of the latter, th. ii., s. 410.

† *Ueber ein Finnisches Epos*, Jacob Grimm, 1845, s. 5.

strongest contrast to the Arian or Indo-Germanic races, or, in other words, to the Indians and Persians.

The Semitic or Aramæic nations afford evidence of a profound sentiment of love for nature in the most ancient and venerable monuments of their poetic feeling and creative fancy. This sentiment is nobly and vividly manifested in their pastoral effusions, in their hymns and choral songs, in all the splendor of lyric poetry in the Psalms of David, and in the schools of the seers and prophets, whose exalted inspiration, almost wholly removed from the past, turns its prophetic aspirations to the future.

The Hebraic poetry, besides all its innate exalted sublimity, presents the nations of the West with the special attraction of being interwoven with numerous reminiscences connected with the local seat of the religion professed by the followers of the three most widely-diffused forms of belief, Judaism, Christianity, and Mohammedanism. Thus missions, favored by the spirit of commerce, and the thirst for conquest evinced by maritime nations, have combined to bear the geographical names and natural descriptions of the East as they are preserved to us in the books of the Old Testament, far into the forests of the New World, and to the remote islands of the Pacific.

It is a characteristic of the poetry of the Hebrews, that, as a reflex of monotheism, it always embraces the universe in its unity, comprising both terrestrial life and the luminous realms of space. It dwells but rarely on the individuality of phenomena, preferring the contemplation of great masses. The Hebrew poet does not depict nature as a self-dependent object, glorious in its individual beauty, but always as in relation and subjection to a higher spiritual power. Nature is to him a work of creation and order, the living expression of the omnipresence of the Divinity in the visible world. Hence the lyrical poetry of the Hebrews, from the very nature of its subject, is grand and solemn, and when it treats of the earthly condition of mankind, is full of sad and pensive longing. It is worthy of remark, that Hebrew poetry, notwithstanding its grandeur, and the lofty tone of exaltation to which it is often elevated by the charm of music, scarcely ever loses the restraint of measure, as does the poetry of India. Devoted to the pure contemplation of the Divinity, it remains clear and simple in the midst of the most figurative forms of expression, delighting in comparisons which recur with almost rhythmical regularity.

As descriptions of nature, the writings of the Old Testa-

ment are a faithful reflection of the character of the country in which they were composed, of the alternations of barrenness and fruitfulness, and of the Alpine forests by which the land of Palestine was characterized. They describe in their regular succession the relations of the climate, the manners of this people of herdsmen, and their hereditary aversion to agricultural pursuits. The epic or historical narratives are marked by a graceful simplicity, almost more unadorned than those of Herodotus, and most true to nature; a point on which the unanimous testimony of modern travelers may be received as conclusive, owing to the inconsiderable changes effected in the course of ages in the manners and habits of a nomadic people. Their lyrical poetry is more adorned, and develops a rich and animated conception of the life of nature. It might almost be said that one single psalm (the 104th) represents the image of the whole Cosmos: "Who coverest thyself with light as with a garment: who stretchest out the heavens like a curtain: who layeth the beams of his chambers in the waters: who maketh the clouds his chariot: who walketh upon the wings of the wind: who laid the foundations of the earth, that it should not be removed forever. He sendeth the springs into the valleys, which run among the hills. They give drink to every beast of the field: the wild asses quench their thirst. By them shall the fowls of the heaven have their habitation, which sing among the branches. He causeth the grass to grow for the cattle, and herb for the service of man: that he may bring forth food out of the earth; and wine that maketh glad the heart of man, and oil to make his face shine, and bread which strengtheneth man's heart. The trees of the Lord are full of sap; the cedars of Lebanon which he hath planted; where the birds make their nests: as for the stork, the fir-trees are her house." "The great and wide sea" is then described, "wherein are things creeping innumerable, both small and great beasts. There go the ships: there is that leviathan, whom thou hast made to play therein." The description of the heavenly bodies renders this picture of nature complete: "He appointed the moon for seasons: the sun knoweth his going down. Thou makest darkness, and it is night; wherein all the beasts of the forest do creep forth. The young lions roar after their prey, and seek their meat from God. The sun ariseth, they gather themselves together, and lay them down in their dens. Man goeth forth unto his work and to his labor unto the evening."

We are astonished to find, in a lyrical poem of such a lim-

ited compass, the whole universe—the heavens and the earth —sketched with a few bold touches. The calm and toilsome labor of man, from the rising of the sun to the setting of the same, when his daily work is done, is here contrasted with the moving life of the elements of nature. This contrast and generalization in the conception of the mutual action of natural phenomena, and this retrospection of an omnipresent invisible power, which can renew the earth or crumble it to dust, constitute a solemn and exalted rather than a glowing and gentle form of poetic creation.

Similar views of the Cosmos occur repeatedly in the Psalms* (Psalm lxv., 7–14, and lxxiv., 15–17), and most fully, perhaps, in the 37th chapter of the ancient, if not ante-Mosaic Book of Job. The meteorological processes which take place in the atmosphere, the formation and solution of vapor, according to the changing direction of the wind, the play of its colors, the generation of hail and of the rolling thunder, are described with individualizing accuracy; and many questions are propounded which we in the present state of our physical knowledge may indeed be able to express under more scientific definitions, but scarcely to answer satisfactorily. The Book of Job is generally regarded as the most perfect specimen of the poetry of the Hebrews. It is alike picturesque in the delineation of individual phenomena, and artistically skillful in the didactic arrangement of the whole work. In all the modern languages into which the Book of Job has been translated, its images, drawn from the natural scenery of the East, leave a deep impression on the mind. "The Lord walketh on the heights of the waters, on the ridges of the waves towering high beneath the force of the wind." "The morning red has colored the margins of the earth, and variously formed the covering of clouds, as the hand of man molds the yielding clay." The habits of animals are described, as, for instance, those of the wild ass, the horse, the buffalo, the rhinoceros, and the crocodile, the eagle and the ostrich. We see "the pure ether spread, during the scorching heat of the south wind, as a melted mirror over the parched desert."†

* Noble echoes of the ancient Hebraic poetry are found in the eleventh century, in the hymns of the Spanish Synagogue poet, Salomo ben Jehudah Gabirol, which contain a poetic paraphrase of the pseudo-Aristotelian book, *De Mundo*. See *Die Religiöse Poesie der Juden in Spanien*, by Michael Sachs, 1845, s. 7, 217, and 229. The sketches drawn from nature, and found in the writings of Mose ben Jakob ben Esra (s. 69, 77, and 285), are full of vigor and grandeur.

† I have taken the passages in the Book of Job from the translation

Where nature has but sparingly bestowed her gifts, the senses of man are sharpened, and he marks every change in the moving clouds of the atmosphere around him, tracing in the solitude of the dreary desert, as on the face of the deep and moving sea, every phenomenon through its varied changes, back to the signs by which its coming was proclaimed. The climate of Palestine, especially in the arid and rocky portions of the country, is peculiarly adapted to give rise to such observations.

The poetic literature of the Hebrews is not deficient in variety of form; for while the Hebrew poetry breathes a tone of warlike enthusiasm from Joshua to Samuel, the little book of the gleaner Ruth presents us with a charming and exquisitely simple picture of nature. Göthe,* at the period of his enthusiasm for the East, spoke of it "as the loveliest specimen of epic and idyl poetry which we possess."

Even in more recent times, we observe in the earliest literature of the Arabs a faint reflection of that grand, contemplative consideration of nature which was an original characteristic of the Semitic races. I would here refer to the picturesque delineation of Bedouin desert life, which the grammarian Asmai has associated with the great name of Antar, and has interwoven with other pre-Mohammedan sagas of heroic deeds into one great work. The principal character in this romantic novel is the Antar (of the race of Abs, and son of the princely leader Scheddad and of a black slave), whose verses have been preserved among the prize poems (*Moallakât*) hung up in the Kaaba. The learned English translator, Terrick Hamilton, has remarked the Biblical tone which breathes through the style of Antar.† Asmai makes the son

and exposition of Umbreit (1824), s. xxix.–xlii., and 290–314. (Compare, generally, Gesenius, *Geschichte der Hebr. Sprache und Schrift*, s. 33; and *Jobi Antiquissimi Carminis Hebr. Natura atque Virtutes*, ed. Ilgen, p. 28.) The longest and most characteristic description of an animal which we meet with in Job is that of the crocodile (xl., 25—xli., 26), and yet it contains one of the evidences of the writer being himself a native of Palestine. (Umbreit, s. xli. and 308.) As the river-horse of the Nile and the crocodile were formerly found throughout the whole Delta of the Nile, it is not surprising that the knowledge of such strangely-formed animals should have spread into the contiguous region of Palestine.

* Göthe, in his *Commentar zum west-östlichen Divan*, s. 8.

† *Antar*, a Bedouin romance, translated from the Arabic by Terrick Hamilton, vol. i., p. xxvi.; Hammer, in the *Wiener Jahrbüchern der Litteratur*, bd. vi., 1819, s. 229; Rosenmüller, in the *Charakteren der vornehmsten Dichter aller Nationen*, bd. v. (1798), s. 251.

of the desert go to Constantinople, and thus a picturesque contrast of Greek culture and nomadic ruggedness is introduced. The small space occupied in the earliest Arabic poems by natural delineations of the country will excite but little surprise when we remember, as has been remarked by my friend Freytag of Bonn, who is so celebrated for his knowledge of this branch of literature, that the principal subjects of these poems are narrations of deeds of arms, and praise of hospitality and fidelity, and that scarcely any of the bards were natives of Arabia Felix. A wearying uniformity of grassy plains and sandy deserts could not excite a love of nature, except under peculiar and rare conditions of mind.

Where the soil is not adorned by woods and forests, the phenomena of the atmosphere, as winds, storms, and the long-wished-for rain, occupy the mind more strongly, as we have already remarked. For the sake of referring to a natural image of this kind in the Arabian poets, I would especially notice Antar's *Moallakât*, which describes the meadows rendered fruitful by rain, and visited by swarms of buzzing insects ;* the fine description of storms in Amru'l Kais, and in the seventh book of the celebrated *Hamasa*;† and, lastly, the picture in the *Nabegha Dhobyani* of the rising of the Euphrates, when its waves bear in their course masses of reeds and trunks of trees.‡ The eighth book of *Hamasa*, inscribed "Travel and Sleepiness," naturally attracted my special attention; I soon found, however, that "sleepiness"§ was limited to the first fragment of the book, and that the choice of the subject was the more excusable, as the composition is referred to a night journey on a camel.

* *Antara cum schol. Sunsenii*, ed. Menil., 1816, v. 15.

† *Amrulkeisi Moallakât*, ed. E. G. Hengstenberg, 1823; *Hamasa*, ed. Freytag, Part i., 1828, lib. vii., p. 785. Compare, also, the pleasing work entitled *Amrilkais, the Poet and King*, translated by Fr. Rückert, 1843, p. 29 and 62, where southern showers of rain are twice described with exceeding truth to nature. The royal poet visited the court of the Emperor Justinian, several years before the birth of Mohammed, to seek aid against his enemies. See *Le Divan d'Amro 'lkaïs*, accompagné d'une traduction par le Baron MacQuckin de Slane, 1837, p. 111.

‡ *Nabeghah Dhobyani*, in Silvestre de Sacy's *Chrestom. Arabe*, 1806, t. iii., p. 47. On the early Arabian literature generally, see Weil's *Die Poet. Litteratur der Araber vor Mohammed*, 1837, s. 15 and 90, as well as Freytag's *Darstellung der Arabischen Verskunst*, 1830, s. 372–392. We may soon expect an excellent and complete version of the Arabian poetry, descriptive of nature, in the writings of Hamasa, from our great poet, Friedrich Rückert.

§ *Hamasæ Carmina*, ed. Freytag, Part i., 1828, p. 788. "Here finishes," it is said in p. 796, "the chapter on travel and sleepiness."

I have endeavored, in this section, to manifest, in a fragmentary manner, the different influence exercised by the external world, or the aspect of animate and inanimate nature at different periods of time, on the thoughts and mode of feeling of different races. I have extracted from the history of literature the characteristic expressions of the love of nature. My object, therefore, as throughout the whole of this work, has been, to give general rather than complete views, by the selection of examples illustrative of the peculiar characteristics of different epochs and different races of men. I have noticed the changes manifested in the literature of the Greeks and Romans, to the gradual decay of those feelings which gave an imperishable luster to classical antiquity in the West, and I have traced in the writings of the early fathers of the Christian Church the beautiful expression of a love of nature, developed in the calm seclusion of an anchorite life. In considering the Indo-Germanic races (using the term in its strictest definition), we have passed from the German poetry of the Middle Ages to that of the highly-civilized ancient East Arians (Indians), and of the less favored West Arians, or inhabitants of ancient Iran. After a rapid glance at the Celtic Gaelic songs and the recently-discovered Finnish Epos, I have delineated the rich life of nature that breathes forth from the exalted compositions of the Hebrews and Arabs—races of Semitic or Aramæic origin; and thus we have traced the images reflected by the external world on the imagination of nations dwelling in the north and southeast of Europe, in Western Asia, in the Persian plateaux, and in the Indian tropical regions. I have been induced to pursue this course from the idea that, in order to comprehend nature in all its vast sublimity, it would be necessary to present it under a two-fold aspect, first objectively, as an actual phenomenon, and next subjectively, as it is reflected in the feelings of mankind.

When the glory of the Aramæic, Greek, and Roman dominion, or, I might almost say, when the ancient world had passed away, we find in the great and inspired founder of a new era, Dante Alighieri, occasional manifestations of the deepest sensibility to the charms of the terrestrial life of nature, whenever he abstracts himself from the passionate and subjective control of that despondent mysticism which constituted the general circle of his ideas. The period in which he lived followed immediately that of the decline of the Suabian Minnesingers, of whom I have already spoken. At the

close of the first canto of his *Purgatorio*,* Dante depicts with inimitable grace the morning fragrance, and the trembling light on the mirror of the gently-moved and distant sea (*il tremolar della marina*); and in the fifth canto, the bursting of the clouds, and the swelling of the rivers, when, after the battle of Campaldino, the body of Buonconte da Montefeltro was lost in the Arno.† The entrance into the thick grove of the terrestrial paradise is drawn from the poet's remembrance of the pine forest near Ravenna, "*la pineta in sul lito di chiassi*,"‡ where the matin song of the birds resounds through the leafy boughs. The local fidelity of this picture of nature contrasts in the celestial paradise with the "stream of light flashing innumerable sparks,§ which fall into the flowers on the shore, and then, as if inebriated with their sweet fragrance, plunge back into the stream, while others rise around them." It would almost seem as if this fiction had its origin in the poet's recollection of that peculiar and rare phosphorescent condition of the ocean, when luminous points appear to rise from the breaking waves, and, spreading themselves over the surface of the waters, convert the liquid plain into a moving sea of sparkling stars. The remarkable conciseness of the style of the *Divina Commedia* adds to the depth and earnestness of the impression which it produces.

In lingering on Italian ground, although avoiding the frigid pastoral romances, I would here refer, after Dante, to the plaintive sonnet in which Petrarch describes the impression

* Dante, *Purgatorio*, canto i., v. 115:

"L' alba vinceva l' ora mattutina
Che fuggia 'nnanzi, sì che di lontano
Conobbi il tremolar della marina" ....

† *Purg.*, canto v., v. 109–127:

"Ben sai come nell' aer si raccoglie
Quell' umido vapor, che in acqua riede,
Tosto che sale, dove 'l freddo il coglie" ....

‡ *Purg.*, canto xxviii., v. 1–24.

§ *Parad.*, canto xxx., v. 61–69:

"E vidi lume in forma di riviera
Fulvido di fulgori intra due rive
Dipinte di mirabil primavera.

Di tal fiumana uscian faville vive
E d' ogni parte si mettean ne' fiori,
Quasi rubin, che oro circonscrive.

Poi come inebriate dagli odori,
Riprofondavan se nel miro gurge
E s' una entrava, un altra n' uscia fuori."

I do not make any extracts from the Canzones of the *Vita Nuova*, because the similitudes and images which they contain do not belong to the purely natural range of terrestrial phenomena.

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ON THE DISTRIBUTION OF FORESTS IN INDIA.*

By DIETRICH BRANDIS, Ph. D.

In all countries the character of forest vegetation mainly depends on soil, climate, and the action of man. In India the greater or less degree of moisture is perhaps the most important element in this respect. Moisture and rainfall are not identical terms. Dew and the aqueous vapour, dissolved in the atmosphere, or the water derived from the overflow of rivers and from percolation, are sources of moisture as important for the maintenance of arborescent vegetation as the fall of rain and snow. It would greatly facilitate the labours of the forester, and of the botanist who inquires after the geographical distribution of forest trees, if the amount of atmospheric moisture and the formation of dew during the seasons of the year in different parts of India had been sufficiently studied ; but, in the present state of our knowledge, we must be satisfied with dividing India into regions and zones according to the more or less heavy rainfall during the year. The arid region, with a normal annual rainfall of less than 15 inches, occupies a large proportion of the north-west corner of India, from the Salt Range in the north to the mouths of the Indus in the south, and from the Suleiman range in the west to the Aravulli Hills in the east. It includes the southern portion of the Punjab, the province of Sindh, the States of Bahawalpur, Kairpur, Bikanir, Jessulmir, and the greater part of Marwar. Throughout this vast region, which covers an area equal to that of the kingdom of Prussia, with a population of about twelve millions, the rains are not only scanty, but most uncertain. It is not a rare occurrence for several years to pass in succession without any showers, and then there is a heavy downpour, gener-

* The above has been re-printed from the Transactions of the Scottish Arboricultural Society, 1873, and was sent to us by Mr. Brandis, who stated that he saw no reason to make any alterations at the present time, and we have therefore reproduced it for the benefit of the readers of the "Indian Forester," few of whom may have had access to the original.

The map has been prepared through the kindness of Mr. G. B. Hennessy, Deputy Surveyor General, from the one accompanying the original pamphlet, and is an improvement on the latter in many respects.

ally in winter, and occasionally in August or September. There are, however, no regular winter or summer rains. A scanty, thorny scrub on the hills gives ample employment to the botanist, for it is here that the representatives of the Arabian and Persian flora mingle with the vegetation which is peculiar to India; but the work of the forester is mainly confined to the belts of low country along the Indus and its great branches. In Sindh, for instance, the area of forest land at the disposal of the State covers 350,000 acres, all situated on the fertile alluvial soil on both banks of the Indus, some of which is inundated annually by the summer floods of this large river, the remainder being moistened by percolation. In lower and middle Sindh a large portion of these forests consists of the babúl (*Acacia arabica*), more or less pure, with a shade so dense that very little grass or herb grows under the trees. In Northern Sindh extensive shrub forests of tamarisk, with standards of acacia and a poplar (*Populus Euphratica*), cover large tracts along the banks on both sides of the river. As the Indus changes its course from time to time, leaving dry last year's bed, and breaking through at another place, forming a new channel, the fresh banks and islands which are thus thrown up are covered at once by a dense growth of self-sown seedlings of tamarisk, with a sprinkling here and there of the acacia and poplar; while in other places large tracts of old forests are carried away by the encroachments of the river. Outside these forests, a little further inland, but still to a certain extent under the moistening influence of the river, are vast tracts of kundi or jhand, an acacia-like tree (*Prosopis spicigera*), *Salvadora*, and an arborescent, leafless caper (*Capparis aphylla*); and further north, in the Punjab, where the rainfall is more regular, and its annual amount approaches or exceeds 10 inches, dry and scanty woods, mainly composed of *Prosopis*, *Capparis*, and *Salvadora*, cover a vast extent of country on the high ground between the rivers of that province. These woodlands are commonly known under the name of rukhs, and they extend far into the second zone, which may be termed the dry region of India, and in which the normal rainfall is between 15 and 30 inches.

There are two zones of dry country,—one surrounding the arid region on the north and east, in a belt from 100 to 200 miles wide, leaving the foot of the Himalayan range about Umballa, touching the Ganges at Fattehgarh, and including Delhi, Agra, Jhansi, Ajmere, and Deesa. This I propose calling the northern dry zone; its natural forest vegetation is scanty, but better than that of the arid region. In some of the States of Rajputana there are extensive woodlands carefully preserved, to furnish cover for game, a regular supply of wood and grass, and in times of drought, pasture for the cattle of the vicinity. In the north these woods consist of *Acacia* and *Prosopis*; further south, mainly of a species of *Anogeissus*, a beautiful tree, with small

leaves, drooping branches, and dense foliage, which clothes the slopes of the old fort of Chittore and other hills in Meywar, and is the principal tree of the sacred groves of that country. On the Aravalli Hills in Meywar, where cultivation mainly depends on the water stored up in tanks, the value of preserving the scanty thorny scrub on the hills, in order to regulate the filling of the tanks from rain, is recognised by some of the larger land-holders. Nor must we forget that we owe the maintenance of the forests in Sindh and of the rukhs in the Punjab entirely to the action taken by the former rulers; and that during the first period after the occupation of the country, the action of the British Government has not in all cases been favourable to the preservation of the forests and woodlands in the arid and dry regions of India. Great exertions have, however, been made of late years to make up in some measure for past neglect in this respect, and in the Punjab extensive plantations have been established since 1865, which now cover upwards of 12,000 acres, the main object in the formation of these new forests being to provide fuel for the consumption of the railways, and fuel and timber for the large towns in that province. The first commencement of these plantations was made by Dr. J. L. Stewart, the author of several valuable books and papers on the vegetation of North-Western India. There is a second dry region in the Peninsula, comprising part of the Deccan, the Maidan or open country of Mysore, and several districts of the Madras Presidency. Exceptionally moist places are within its limits, such as Bangalore, which, being situated 3,000 feet above the sea, has 35 inches rain; but upon the whole, and excluding such hills as rise considerably above the table-land of South India, this belt, which stretches from Nasik in the north to Cape Comorin in the south, has a normal rainfall of less than 30 inches. This belt includes Poona, Bellary, and Kurnool in the north, and Madura and Tinnevelly in the south. Over a great part of it is found the sandal-wood (*Santalum album*), a small tree with fragrant heart-wood, which comes up here and there in bushes and hedges, but does not grow gregariously, and does not form pure forests. Large quantities of this delightfully fragrant wood are used for carving and inlaid work, as incense in Hindoo temples, and there is a considerable export of it to China.

Outside these two dry zones the normal annual rainfall exceeds 30 inches, save north of the first great snowy range of the Himalaya, where rain and snow are scanty, and the country consequently arid and bare. The rest of India has a rainfall greater than that of Europe. Yet really thriving forests are only found where the fall exceeds 40 inches, and rich luxuriant vegetation is limited to those belts which have a much higher rainfall. It must be borne in mind that the annual mean temperature of Central Europe ranges between 45° and 60°,

while that of India is as high as 75° to 85°. Under a higher temperature a larger amount of moisture is required to produce rich vegetation. At the same time, in India, the supply of moisture is unequally distributed over the seasons of the year. In most districts the year divides itself into two unequal parts, —a long dry season, and a short rainy season. In most provinces of India the principal rains are summer rains, due to the prevalence during that season of the south-west monsoon, and the most humid regions are those tracts which are fully exposed to the influence of these moist south-westerly winds. In addition to these, there are Christmas or winter rains in Northern India, but they only last a few days, or at the outside a week or two, and are, moreover, extremely uncertain and irregular. On the eastern coast of the peninsula the summer rains are slight, the principal fall coming with north-easterly winds in October and November. But in the greater part of India the dry season lasts from November to May, the rains commencing between May and July, and ending between August and October. In the moister districts the rains commence early and last longer, while in the dry belts there is rain only during two or three months of the year ; and in the arid region the rainfall is altogether uncertain.

The temperature during this long dry season is cooler at first and warmer afterwards. The mean temperature of the three months, December, January, and February, generally termed the cool season, ranges between 60° in the Punjab, and 79° in the south of the Peninsula. During these months dew is formed more or less, regularly, and contributes much to the maintenance of vegetation particularly in the dry and arid zones. Radiation is so powerful during this season that frost is not of uncommon occurrence in the plains and lower hills of Northern and a part of Central India. These night frosts have interfered much with the satisfactory progress of the plantations in the Punjab, and as far south as Sukkur on the Indus, in latitude 27° 30′, and the Satpúra range in the Central Provinces, in latitude 23°, frost is a serious difficulty in arboriculture. As far south as Calcutta, ice can be made on carefully prepared beds covered with straw, shortly before sunrise on a still, clear morning. The mean temperature of the three months which follow, which are generally called the hot season, is 75° in the Punjab, 85° along the coastline, and 90° in the interior of the Peninsula, and this dry heat, with the hot scorching winds which blow over a great part of India during these months, makes this season extremely trying to forest vegetation.

With the exception of the extensive evergreen forests of the Himalaya, and the limited tracts of evergreen forests in the plains and lower hills of the humid regions, the great mass of forests in India are deciduous, and they are bare and leafless during the hot season. During this time of the year, the sojourn in the Indian

forests is not pleasant. No shade, no protection against the fierce rays of the sun, great scarcity of water in many parts, and a tent or hut with a temperature in its coolest part of 105°,—these are conditions of existence which are not easily forgotten. Deciduous, however, as applied to trees, is a relative term. The only difference is, that an evergreen tree retains its leaves longer than one which is called deciduous. Thus the spruce and silver-fir retain their needles from seven to eleven years, the Spanish *Pinus pinsapo* and the *Araucaria* retain them even longer, hence the full foliage and the dense shade of these trees. On the other hand, the needles of the Corsican and Austrian fir (*Pinus laricio*) remain three to four years; and the Scotch fir, with lighter foliage, has needles of two or three years only on its branches. The sál tree (*Shorea robusta*), one of the most important timber trees of India, with strong, hard, heavy wood, which forms extensive forests along the foot of the Himalaya and in the eastern part of Central India, retains its leaves nearly twelve months; the old leaves fall gradually, and the foliage gets thinner and thinner, until the new flush of leaves breaks out in March or early in April. So that although a sál forest is hot during that time of the year, and there is not much shade, yet the tree is never completely bare. The teak tree, on the other hand, which may be called the king of Indian timber trees, on account of its useful, durable, strong, and yet not very heavy wood, sheds its leaves as early as January, and is leafless for four or five months, though this again depends upon the supply of moisture, for in low humid places the tree often continues green throughout February. Fortunately for foresters in the hot dry provinces of India, there are to be found in most dry deciduous forests one or two kinds which break out in leaf sooner than the others, and I have spent many an hour during the heat of the day under the grateful shade of what we call the forester's friend (*Schleichera trijuga*), a tree remarkable for its extremely heavy wood, the cubic foot weighing, when perfectly dry, over 70 lbs., or nearly three times the weight of common deal.

The grass and fallen leaves, in these dry, deciduous forests, dry up rapidly during this season, and towards March and April everything is so scorched that it is as inflammable as tinder, so that the smallest spark is sufficient to create a conflagration. These jungle-fires are almost a regular annual institution in the deciduous forests of most provinces. In some instances, they are caused by accident, but in the majority of cases they arise from the temporary clearings made by cutting and burning, and the custom of the herdsmen to burn down the old grass in order to cause the fresh tender shoots to spring up as fodder for their cattle. It is true that these fires clear the ground, and make walking through the forest easier; and, up to the present time, many otherwise observant people in India have been of opinion that these fires are not mischievous, and might in some

cases be beneficial. The damage, however, done by them defies calculation. Millions of seeds and seedlings are destroyed, trees of all ages are injured, and often killed, the bark is scorched and burned, the wood exposed to the air, dry rot sets in, and the tree gets hollow and useless for timber. One of the most remarkable facts in the working of the Indian forests in the plains and lower hills has been the large proportion of hollow and unsound trees. In many forests one-half, in others three-fourths of the mature trees are hollow. To a certain extent this is due to the old age of the timber felled; but experience elsewhere proves that old age can only account for a small proportion of the hollow and unsound trees. The annual jungle-fires are the principal cause of this mischief. In this respect all deciduous forests in India suffer alike. With regard to reproduction, that is, the growth of seedlings, some trees are better off in this respect than others. Thus the sál tree ripens its seed about the commencement of the rains, after the jungle-fires have passed through the forest. The young plants thus germinate at once in great abundance. The jungle-fires of the coming season kill a good many, and cause a large proportion of the others to grow hollow; but in the dense mass of seedlings which clothes the ground under the parent trees in a sál forest, the damage done is comparatively small. This, to a certain extent, explains how the sál forests are nearly pure, the stronger tree in the matter of reproduction predominating over all the rest. The teak, on the other hand, ripens its seed early in the dry season, the jungle-fires consume large quantities of it; a smaller proportion of seedlings spring up, and these are either killed or cut down to the root year after year by the fires. Meanwhile, the root stock increases in size every year by the action of the shoots, which come up during the rains, and at last, often after the lapse of many years, it produces a shoot strong enough to outlive the fires. Thus what appears a seedling plant of teak is in most cases really a coppice shoot from a thick gnarled root-stock, bearing the scars of successive generations of shoots, which were burned down by the annual fires.

Protection against fires is not an easy task in our European forests. Many square miles of Scotch fir in Eastern Prussia, where this widely spread tree is the prevailing kind, have at various times been burned down, and in the cork oak and *Pinus maritima* forests of Provence the ravages have been terrible, the long summer drought of Eastern Europe and of Southern France having in this respect the same effect as the long dry season in India. But in India the task has been a particularly difficult one. The first step was to convince people that these fires were injurious, and when that was accomplished, to isolate the tracts to be protected by clearing broad firepaths round them, and burning down, early in the dry season, all grass and leaves in a broad belt surrounding the forests. The credit of having been the first to take in hand this important work on a large scale is due

to Colonel Pearson, in those days in charge of the forests in the Central Provinces, and now holding a most important position in the Forest Department under the Government of India. It is mainly due to his energy and perseverance that fires have been kept out for more than six years from a large forest tract of 30 square miles, called the Bori Forest, producing teak, bamboos, and various useful trees, in the Satpúra range. The effect has been marvellous, and if these exertions are steadily continued, this forest promises to become one of the most valuable in the central parts of India.

From what has been said, it will be understood that in the plains and lower hills of India the annual repose of arborescent vegetation is not caused by the cold of winter, but mainly by the drought of the hot season. Shortly before the rains set in, or with the early showers which precede the monsoon, most trees clothe themselves with fresh green, and in the arid region, where the periodical summer rains are wanting, the summer floods of the river revive the forest growth on its banks after the long drought of the dry season. In those parts of India which have a heavy monsoon, the temperature is generally somewhat lower during the summer months, June, July, and August, than during the preceding hot season. Thus it is that on the western coast of the peninsula the mean temperature of the hot season is 85°, and that of the three succeeding months, when the sky is overcast with clouds, and the force of the sun's rays is rarely felt, is only between 80° and 82°. On the Burma coast also, in Akyab, Rangoon, and Moulmein, the mean temperature of the monsoon months is somewhat lower than that of the preceding hot season. The relief from the incessant powerful action of the sun's rays, brought about by the storms of the monsoon, and the cloudy and rainy weather which follows, is delightful. It is not the vegetation only which revives; the whole animated nature feels the pleasant change. This relief is denied to the arid region. Here, in the north-west corner of India, the temperature continues to rise higher and higher with the sun, and the result is, that in June, July, and August, the highest mean temperature is found in the arid zone of India. Thus Multan has a mean temperature of 77° during what is termed the hot season in other parts of India, and of 92° during June, July, and August; and at Jacobabad, in Sindh, the mean temperature during these months is as high as 96°. Where, however, sufficient water is supplied by irrigation, these high temperatures stimulate vegetation in a remarkable manner. The station of Jacobabad is a striking example of the effect of water supply in that climate. It was founded in 1844 by General Jacob, in the midst of a barren, treeless desert. A canal was led to it from the Indus, and now the plain is a dense forest of babúl and other trees, upwards of 60 feet high, sheltering the houses and gardens of the inhabitants. A ride of a few miles takes you into the desert which skirts the hills of

Beluchistan, a level plain of splendid, fertile, alluvial soil, but hard, naked, and barren, like a threshing floor, without shrub, herb, or grass, except in the vicinity of the canals, where vegetation is rich and luxuriant.

In the Himalayan Hills, vegetation rests in winter as it does in Europe, and in the vast tracts of those mountain ranges the forester finds himself surrounded by forms similar to, and in a few cases identical with, the trees and shrubs of Europe. The climatic conditions are analogous, though not identical. At the higher elevations the year divides itself into the four seasons with which we are familiar in Europe, but the main supply of moisture is in summer, and the summer rains are preceded by a long dry season, which is much warmer than the spring is in Central Europe. In the outer ranges the rains are heavy, but the whole falls in torrents within a few months, and has not, therefore, the same effect upon vegetation as the uniformly distributed moisture of our own climate. There are other points of difference in the climate of the higher Himalayan ranges and of Central Europe, and this explains that some of the hardiest Himalayan trees, which grow at an elevation of 12,000 feet, within a few thousand feet of the line of perpetual snow, such as the silver fir (*Pinus Webbiana*), refuse to thrive in Great Britain and on the Continent. Even the deodar (*Cedrus Deodara*) and the blue Himalayan pine (*Pinus excelsa*), which are common in parks and gardens in England, do not thrive in many parts of Europe.

There is a great difference in the total rainfall in the outer and inner belts of the Himalayan forests. At Simla, and in the vicinity, on the outer ranges, the fall is from 70 to 80 inches, and here the deodar attains a diameter of 2 feet in from 60 to 80 years. The moist southerly currents which prevail in summer pass over the hot plains of the arid region without depositing their moisture; but as soon as they are brought into contact with the cooler air of the hills and forced upwards into regions of less atmospheric pressure, condensation begins, and their surplus moisture is deposited in the shape of torrents of rain. Thus, there is on the outer ranges of the north-west Himalaya a narrow belt, not more than 30 miles wide, with a rainfall exceeding 75 inches. Further inland the fall decreases rapidly—Kotgurh, for instance, distant 40 miles from Simla, has 38 inches only. Beyond the first snowy range the rains are scanty. Here, at the same elevation as in the vicinity of Simla, the deodar takes from 150 to 200 years to attain a diameter of 2 feet; higher up the valley, at a distance, as the crow flies, from the plains of 120 miles, spontaneous arborescent vegetation ceases entirely, the last being the tree juniper (*Juniperus excelsa*), fine specimens of which may be seen growing in Kew Gardens.

The moist zone, with a normal annual rainfall, exceeding 75 inches, which comprises the outer Himalaya, extends north-west

as far as the Dhaola-dhar range, which borders the fertile district of Kangra. Beyond this the fall even on the outer hills is less. Thus, the station of Abbottabad, between the rivers Jhelum and Indus, has only 41 inches. South-eastward the moist zone widens. In Lower Bengal the line which indicates its limit passes through Dacca, reaching the coast west of Chittagong, so that Assam, the Khasia Hills, Silhet and Cachar, Tipperah, and Eastern Bengal, are all included. This, the north-eastern moist region of India, also comprises Arracan and the coast districts of British Burma. The eastern portion of this extensive moist belt has a much heavier rainfall than the north-western portion, and here again it is heaviest on the mountains. Thus, Darjiling, in British Sikkim, at an elevation of about 7,000 feet, has 125 inches; and Cherrapunji, the former sanatarium on the Khási Hills, at 4,000 feet, has an annual fall of 600 inches, or 50 feet. On the Burma coast also the rain is heavy. Thus Akyab, the chief town of Arracan, has 219; Tavoy further south, on the Tenasserim coast, has 201 inches; and Rangoon, situated at some distance from the sea in a wide extent of nearly level country, has 85 inches.

On the higher mountain ranges of this extensive moist region forests of pines and other conifers extend from the north-west Himalaya southwards to the mountains of Burma. The deodar has its eastern limit in Kumaon, but there are other coniferous trees, which extend over the eastern part of the Himalaya range. One of the finest of these is *Pinus Kasya*, which is found as far south as the high mountains between the Salween and Sitang rivers in British Burma. These mountains are the seat of a numerous Karen population, formerly an idle, drunken, and lawless race, which, through the teaching of Christianity, brought to them by American missionaries, have become an industrious, sober, and peaceful people. Some of their villages are in the midst of these splendid pine forests, and I have often, when coming from the teak forests in the hot valleys of the Salween and Sitang, been refreshed by the delightful fragrance and cool shade of the pine trees on these hills. But, as if to remind the botanist that, though in a pleasant, cool mountain climate, he is within the tropics, and only 19° distant from the equator, there is an underwood of the sago palm (*Cycas*) under the pine trees, and most of the Karen villages are surrounded by the gigantic bamboo, which yields the posts, rafters, walls, and floors of their houses. The joints of this bamboo are so large that they are used as water pails and buckets. There is another pine tree in Burma, nearly related to a Japanese species, which grows at a lower elevation in the midst of the dry and hot tropical deciduous forests.

These tropical and sub-tropical pines, however, are not yet of much practical importance. The production of teak timber is the main object which the forester has in view in those parts of

the country. The export of teak timber from Rangoon is of old date ; but, under the Burmese rule, the quantity exported never came to any very large amount. When the province of Tenasserim became British in 1826, the Attaran forests, which are situated south of the town of Moulmein, were worked with great energy, and yielded large quantities of excellent timber. The supply from that source, however, soon diminished, and thus the attention of timber traders was directed to the extensive teak-producing forests beyond the British frontier, on the Salween river and its tributaries, and from that time the importation of foreign timber into Moulmein has steadily increased until within the last few years, when the quantity floated down decreased, mainly because the stock of good timber in the vicinity of the river and its tributaries had gradually become less. Soon after the annexation of Pegu in 1853, the forests of that province were placed under a regular system of administration, and in 1858 this system was extended to the forests in the province of Martaban and Tenasserim. The result has been, that, without impairing their productiveness, the out-turn of the forests in British territory has gradually been raised from an insignificant figure to a very considerable amount ; so that within the last five years they have yielded between one-third and one-half of the total quantity of teak timber brought to the principal sea-ports. The timber trade of the Burma ports is not large as compared with that of Canada, yet it is of considerable importance, the export amounting to about 100,000 tons annually, with a value of about £700,000. The forests in the King of Burma's territory ; in Siam and the Karenee country, are much more extensive and rich in fine timber than those in our territory ; yet, unless placed under a regular system of management, they will surely be exhausted before long, and on that account we must, to a great extent, look to the forests within British territory for the maintenance of the supply in future. It is satisfactory that the efforts to protect and improve the forests in British Burma have also financially been remunerative. Within the last four years the gross revenue from these forests has fluctuated between £64,700 and £98,400, and the net annual surplus to the State has been between £31,900 and £56,500.

The teak tree in Burma, as elsewhere, is found in the dry deciduous woods, never forming pure forests, but always growing in company with a large number of bamboos and other trees. Its growth is rapid while young, but slow at a more advanced age. In 1862 I sent a few teak poles, 30 feet long, to the great London Exhibition ; they had attained that size in two years, in a moist part of the country, on rich soil, and protected from fire. On the other hand, the results of researches made regarding the age of mature trees have led us to the conclusion that more than 100 years are required on an average for the teak tree to attain a diameter of 2 feet. The fires clear

the ground annually of dry leaves and grass, which would otherwise form vegetable mould, enrich the soil, and keep it moist and loose. The bare ground, exposed to the full force of the sun, dries up rapidly with a hard baked surface, the rains of the monsoon rush down the hills and slopes, and the ashes, the remains of the fires, are washed away, without contributing much to the nourishment of the trees. Thus the fires do not only injure the regeneration of the forest, cause the timber to grow up hollow and unsound, but they also impair the productiveness of the soil, and retard the rate of growth of the trees. In Burma the fires are principally caused by the practice of toungya cultivation. The forest, instead of being converted into permanent fields, is cut down in January ; and in March or April, when the large mass of stems, branches, and bamboos, which cover the ground, have become sufficiently dry, it is burned. On the first rainfall, rice, cotton, and vegetables are sown, and yield an abundant harvest, no ploughing and digging, only weeding and reaping being necessary. In some cases a second crop is taken ; but after that, and more often after the first crop, the field is abandoned, a fresh piece of forest is selected for burning, and in this manner destruction spreads rapidly over large areas. Some of the finest teak forests in British Burma have been destroyed by these clearings ; and, with the steady increase of population under British rule, the injury done by this erratic kind of husbandry has become enormous. This mode of wandering cultivation is practised throughout the wilder parts of India ; in Mysore, where it is known under the name of kumri, it was possible, about 20 years ago, to protect the forests by stopping this practice throughout the country. This result was mainly due to the exertions of Dr. Cleghorn, for many years Conservator of Forests in the Madras Presidency, and afterwards employed by the Government of India in the organisation of forest administration in the provinces of Northern India. In Burma, such a summary course of procedure was not found practicable, and instead of protecting the whole of the forests, all that could be done was to prohibit tongya clearings in a limited extent of the best teak-producing tracts, and in those localities which were set apart for the formation of new teak forests by planting.

The selection and demarcation of these tracts, which will eventually be the State forests in that province, has not progressed rapidly, and these reserved forests in Burma do not yet amount to more than about 80,000 acres, 1,600 acres of which have been covered with teak plantations.

(To be continued).

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ON THE DISTRIBUTION OF FORESTS IN INDIA.

By DIETRICH BRANDIS, Ph. D.

Besides the dry, deciduous teak-producing tracts there are in the moister parts of the lower hills of Burma extensive and most luxuriant evergreen forests, composed of a large variety of trees, often 200 feet high and more, and so dense that except on the numerous paths trodden by wild elephants, or on the scanty foot-paths which lead from village to village, it is almost impossible to penetrate through them. The forester classifies trees with special reference to the amount of light which they require. The Scotch fir, for instance, demands a great deal of light; its seedlings will not readily spring up and thrive under the shade of its own kind or of other trees. The beech, spruce, and silver fir, on the other hand, can stand a great deal of shade; their seedlings will maintain themselves a long time in the deep shade of the forest, growing very slowly, making very little progress; but when a clearing is made accidentally or intentionally, they will shoot up with great vigour. Where woodlands are managed on a large scale, the peculiarities of each kind of tree are carefully studied, and the treatment of the different classes of forest adapted to them. In India, teak demands a great deal of light. On the other hand, most of the trees which compose the tropical evergreen forest will stand a great amount of shade; and thus it happens that the underwood of these dense forests does not only consist of shrubs and climbers, but to a great extent of seedlings of the very trees which form the dense shady roof overhead. When one of these old giants falls, the mass of seedlings takes a start, and as they all strive upward to the light they draw each other up to a great height, the weaker plants perishing in the fierce struggle for existence. The trees in these forests cannot, however, either in height or growth, be compared to the Wellingtonia of California or to the Eucalyptus of Australia. The tallest tree which I have seen and measured in India was 250 feet high and 38 feet in girth. This was a species of upas tree (*Antiaris*), in the Thoungyeen forests of British Burma. Such dimensions, however, are never found in the deciduous forests. The tallest teak tree measured by me was 102 feet to the first branch, with perhaps, an addi-

tional 50 feet of crown above. Teak trees with clear stems, 60 to 80 feet to the first branch, are not rare in the moist regions of India. I have found them in Burma, in the Dang forests, north of Bombay, and in those glorious but hot forests of North Canara, which are probably the most extensive and richest teak forests remaining in British India. Teak of such size and length is only found in very favourable localities where the young trees had grown up close together on rich dry soil, in dells or sheltered valleys, generally in company with tall bamboos, and where they were thus compelled to draw each other up to that height.

Luxuriant vegetation, under the influence of an abundant supply of moisture, has its drawbacks, however, as well as its advantages. Thick masses of tall grass and weeds spring up in the teak plantations of Burma, smother the young trees, and greatly increase the risk of fire. Worst of all are the climbing plants with which the teak, sál, and other forests in all moist tracts abound. Huge creepers, like gigantic ropes, often as thick as a man's thigh, and thicker, stretch from the ground to the top of the trees: they give off numberless branches, and their foliage completely covers and smothers the crown of the tree of which they have taken possession. When a young tree is attacked by one of these gigantic climbers, the stem remains short, gets crooked and deformed, and makes no progress in growth. In Burma several kinds of epiphytic Ficus attack teak and other trees; the seed germinates in a fork or in a hollow of of the trunk, sends down its roots, which eventually enclose the stem as with a network. At last the tree dies, and the Ficus spreads its massive but useless limbs in all directions. In the sál forests of Oudh the climbers were particularly heavy and numerous when these tracts came into our hands. Owing to several favourable circumstances, it was possible in that province at once to set apart and demarcate a large area of forest land as State forests, and the work of cutting the climbers was at once taken in hand and completed at a considerable outlay; so that now these forests are almost entirely cleared of large climbers, and the young sál has a chance of growing up straight, and forming valuable timber.

Much smaller in area than the north-eastern moist region is that which extends along the western coast of the Peninsula. It begins north of Bombay, and, guided rather by the character of the vegetation than by meteorological observations, which in those wild tracts we do not possess, I have included in it the northern Dangs, a dense and most feverish forest district at the foot of the Khandeish ghâts. The eastern limit of this western moist zone runs nearly parallel with the crest of the ghâts, but at a short distance from the ghât line. The moist zone thus includes the edge of the ghâts, their western slope, and the hilly country between the ghâts and the coast-line. Its width varies from 50 to 100 miles. Surat, with 47 inches of rain, is outside;

Bombay, which is included, has a fall of 72 inches only, but Tanna, a few miles inland, has 102. Further down the coast, the rainfall is heavier. Ratnagiri has 115 inches, Vingorla 118, and Cannanore 123. But the heaviest fall in this zone is on the crest of the ghâts. Here, as on the outer ranges of the Himalaya, and the Khasia Hills, the moist currents of air coming from the west, which strike against the steep face of the ghâts, are forced upwards, into a cooler and more rarefied air, and the consequence is an extremely heavy downpour during the monsoon. Thus the Sanatarium of Mahableshwar, south of Bombay, 4,300 feet above the sea, has a fall of 250 inches; but Panchgunny, at a distance of only 10 miles inland from the crest of the ghâts has 50 inches; and Poona, 30 miles from the ghât line, has a fall of only 27 inches. This rapid decrease of moisture inland explains that the western limit of the southern dry belt runs within a short distance from the crest of the ghâts. At the southern extremity of the Peninsula the rain near the coast diminishes, so that Cape Comorin, with 28 inches, and Palamcotta, with 22, fall into the southern dry zone.

Forest vegetation in the western moist region is in places fully as luxuriant as in Burma and Eastern Bengal. There are the same great classes of dry deciduous forest, with the jungle-fires as a regular, annually recurring institution, and the moist evergreen forests, including what are commonly called the Sholas of the Nilgiris, into which the jungle-fires do not enter. The rich variety of trees in both descriptions of forest has been carefully studied by Major Beddome, the present* head of the Forest Department in the Madras Presidency, and author of the first forest flora published in India, containing a full account of the trees and shrubs of Southern India. In the forcing climate of Malabar, in the heart of this moist region, is the oldest and as yet most extensive teak plantation in India. Commenced in 1844 by Mr. Conolly, then Collector of that district, its present extent is upwards of 2,500 acres. A hundred acres on an average were planted annually, so that there is a regular succession of thriving plantations, the oldest being now twenty-eight years old, with tall stems 70 to 80 feet high, a splendid instance of the rapid growth of the teak tree in its youth, under good care and in a favourable climate. The northern half of the western moist zone is in the Presidency of Bombay. In this part of India a regular administration of the public forest-lands was attempted as early as 1846, and the result of the early attention paid to this matter may be seen in a large and steady forest revenue between £82,000 and £123,000 annually during the last six years, one-half of which has been a net addition to the general revenues of the Empire. At the same time, the forests in several districts of the Presidency have considerably increased in

* 1873.

value; they now contain a larger stock of growing timber than at the time that conservancy was commenced, and plantations have not been neglected.

While thus a good deal has been done to increase the growth of useful indigenous trees, the introduction of foreign trees has not been neglected in India. The splendid table-land of the Nilgiris, which is raised 7,000 feet above the hot plains, is in places getting rapidly covered with forests of exotic trees. From Australia several kinds of *Eucalyptus* and *Acacia* were introduced about twenty-five years ago, and they have made such progress that the station of Ootacamund is now almost surrounded by a forest of these trees. Their rate of growth is wonderfully fast, much faster than that of the indigenous trees. At the same time, young forests of the quinine-yielding *Cinchonas* are coming up in many places. The management of these Cinchona woods will probably be similar to the treatment of oak coppice in England; for though oak bark has not one-twentieth the value of Jesuit's bark, it is the bark in both cases for which these woods are mainly cultivated. There will, however, be that difference that while oak coppice in Europe, after having been cut over, requires from fourteen to twenty years to yield another crop of bark, Cinchonas appear to grow so rapidly that they may probably be cut over every eighth or tenth year. Fever is the great scourge and calamity of India, for natives as well as for Europeans. Cinchona bark, and more so pure quinine, are the only effective remedies, and, if they were less expensive, millions in India would be benefited by them. The natural forests of the more valuable kinds in South America are approaching exhaustion. Experience has sufficiently proved that some of the most valuable species succeed well on the Nilgiris, in Ceylon, and on the lower hills of British Sikkim, and that they yield an abundance of quinine. But the localities where the best kinds can be grown in India are limited, and it would be well if as much of the available area as possible were planted with Cinchonas. It has been said that India owes more to the Portuguese than to any other nation in the matter of plants and trees introduced from abroad, and certainly the papaya, guava, custard-apple, cactus, pine-apple and agave, all naturalised more or less directly through their agency, bear testimony, in almost all parts of India, to the skill and activity of the early Portuguese settlers. On the other hand, it is due entirely to British enterprise and energy that the Coffee tree, which was introduced about a hundred years ago by a Mussulman saint from Arabia into South India, and first cultivated on the Bababooden Hills, in Mysore, is now grown in numerous extensive well-managed plantations; that Tea, the existence of which in India was hardly known forty years ago, has become an important, annually-increasing article of export; and, lastly, that the Cinchona tree was successfully introduced from South America, and promises to be one of the greatest blessings to the people of India.

So much will be clear from these remarks, that in the climate of India the luxuriance of arborescent vegetation is a sure index of moisture. A glance at the map might tempt us to go farther, and to say that the limits of distribution of the different species in India seem to depend in a greater degree on moisture than on other climatic conditions. The northern limit of teak, it is true, seems to be more influenced by the temperature of the cold season than by moisture. Natural teak forests are not found where the mean temperature of the three cool months is considerably less than 60°, though the tree will stand occasional night frosts, which are not uncommon in some of the valleys of the Satpura range. But no teak is found on the Aravulli Hills about Ajmere, though that place has a mean temperature of 65° during the cold season. In this direction it apparently is the want of sufficient moisture which has limited the further extension of the species by natural means. By cultivation, this, as most other trees, has been extended far beyond its natural limits; numerous fairly-growing teak trees are found in gardens in Bengal, the north-west, and even in the Punjab; a teak plantation has been commenced at Sikkim; and it has been proposed to cultivate this valuable tree on a large scale in Assam. Within certain limits the teak tree does adapt itself to different conditions of soil and climate; but limits there are, and, as far as our present knowledge goes, it thrives best with a rainfall above 30 inches, a mean temperature during the three cool months of between 60° and 80°, and during the rest of the year between 70° and 90°. Teak is spread over a great part of the dry belt of Southern India, but only as poor coppice, yielding a scanty crop of poles and rafters, and never attaining any large size.

The sál tree is found in two large belts, one extending along the foot of the Himalaya range from Assam to the Sutlej river, with a few outlying patches beyond, and the other occupying the eastern part of Central India. The sál depends, to a much greater extent than the teak, on certain peculiarities of soil; it is mainly found on sandstone, conglomerate, and gravel, but does not thrive on the heavy clay-soil which overlies the extensive trap-rocks of the Deccan and part of Central India, and this peculiarity may have a considerable influence in limiting the area of its distribution. It stands more cold than teak, but it does not seem to thrive with less than 40 inches of rain.

A far more limited range of distribution has the Caoutchouc tree (*Ficus elastica*), a tree which is frequently grown in conservatories and drawing-rooms in this country and on the Continent; so much so, that in Germany it goes by the name of the Berlin weed. Its milky juice yields a description of India rubber, not equal to the excellent Para rubber, the product of an altogether different kind of tree in Brazil, but which may be capable of improvement by a more careful method of collection. In India this Caoutchouc tree has only been found in the moist

forest skirting the Eastern Himalaya from Sikkim to Assam, and at the foot of the Khasia and Cachar Hills. A humid atmosphere, and equable temperature throughout the year, seem to be the principal conditions of its free growth. The mean temperature in the stations nearest to the Caoutchouc forests is between 60° and 65° in the cold seasons, and 80° and 85° in the three hottest months.

The conditions of existence under which the deodar grows at the north-western end of the Himalayan range are altogether different. To begin with, it demands a certain elevation; as a rule it does not thrive in the north-west Himalaya under 4,000 feet, but it ascends to 10,000 and at times to 12,000 feet. As to mean temperature, a range between 35° and 50° in the cold season, and 65° to 75° during the three summer months, seems to suit it best. As regards humidity, the Indian cedar does not go beyond certain limits of drought and moisture. In the Sutlej and other Himalayan valleys it disappears where the arid region commences, although the conditions of soil, temperature, and elevation are not unfavourable. Again, it is wanting in the Eastern Himalaya, where the rainfall exceeds 100 inches. The deodar is so closely allied to the Cedars of Lebanon, the Taurus, and the Atlas mountains, that botanists find it difficult to keep them distinct as species. A close comparison of the climatic conditions under which these western cedars grow, with the climate of the north-west Himalaya, may lead to interesting results regarding the history of the spread of these beautiful and useful trees. It is not, however, climate, soil, and the action of man in historic times alone, which determine the area over which plants or trees are actually found at the present time; other far more remote causes have been at work, the study of which forms the most interesting part of botanical geography. The forester, however, has to take things as they are, and to him the most important point is to ascertain the conditions most favourable for a vigorous growth of those trees which pay best, and which yield the largest quantity of timber and other forest produce within a certain time on a given area.

The other trees indicated on the map, babúl and sandal-wood, are satisfied with a moderate supply of moisture. The babúl tree is spread over a great part of India, but it is wanting or does not grow well in the moist zones. Without irrigation it seems to grow best under a rainfall between 15 and 60 inches; and where moisture is supplied from below, it thrives well in the driest parts of India. The sandal-wood is at home in India mainly in the southern dry zone; it demands a hot dry climate. In gardens it is grown in many of the more humid districts, but the heart-wood is less fragrant and less valuable. The tree is not, however, limited to India; it is also found in the Indian Archipelago, and there are other species of the same genus yield-

ing sandal-wood in the Fiji and other islands of the Pacific from whence it is largely exported to China.

What has here been advanced makes it sufficiently clear that there exists an intimate connection between the climate of India and its forest vegetation. The practical aspect of the subject, however, has not yet been touched upon. Well may the question be asked, why we should trouble ourselves concerning the maintenance and improvement of the forests in a country which has a civilisation many centuries older than our own, which has existed and has maintained an immense population so long, without feeling the want of any systematic care of its forest lands? I must ask the reader at once to dismiss the idea that by preserving and improving the forests of India we may hope materially to change and improve its climate. It is a widely spread notion, entertained by many writers who are competent to judge, that forests increase the rainfall, and that the denudation of a country in a warm climate diminishes its moisture. Much of what is known regarding the history and the present state of the countries round the Mediterranean seems to support this theory, but it has not yet been established by conclusive evidence. In India, where, directly or indirectly, the success or failure of the crops depends on rain at the right time and in suitable quantity, it is natural that the conservancy and improvement of its forests should have been regarded as one of the means to be employed for a better regulation of the rainfall. Many remarkable facts are recorded, which seem to show that in comparatively recent times, the denudation of certain tracts has been accompanied by changes in husbandry, indicating a diminished or less regular rainfall. There is not yet, however, sufficient evidence to prove that a material deterioration of the climate has been the result of denudation in any part of India. Much less has it been established that by preserving and extending the forests we may hope considerably to increase the rainfall. Not that a country covered with forests is not under certain circumstances likely to have more frequent and heavier showers than a hot barren desert, but there is no prospect of our carrying out in India any measures on a sufficiently large scale to effect any appreciable improvement of the climate. In the moist zones, and in a large portion of the intermediate region, the country would not benefit if the total annual rainfall was increased. The land would undoubtedly produce more frequent and heavier crops if we could by any means more equally distribute the moisture over all seasons of the year. The seasons in India, however, are regulated by the dry north-easterly winds which prevail during one-half of the year, and the wet south-westerly currents which reign during the other half; and these, again, are the results of the rotation of our globe, the position of the sun, and the distribution of land and water on our hemisphere, and of other cosmic phenomena which will not be affect-

ed by any forest cultivation in India. What might be extremely useful would be to increase the rainfall in the arid and dry regions, where the cultivation of the land to a great extent depends on irrigation, and where a dry season causes famine of the most terrible character. If by any means we could increase the atmospheric moisture in the drier districts of the Deccan, in parts of Mysore, Rajputana, Sindh, and the Southern Punjab, these countries might maintain a dense population in prosperity. But of such improvements all prospect is denied to us. If it were possible to cover any large proportion of these dry districts with forests, the stratum of air overlying the top of these forests would undoubtedly be cooler and moister, and during the south-west monsoon this would certainly bring down a few additional showers. But it is not possible. Save along the banks of rivers, there is no moisture to raise and to maintain such forests, which I fear will remain a fond hope not to be realised in our time. By preserving and improving the woods along the coast of the western ghâts, it has been stated that the rainfall in the dry country beyond might be increased. As far as our knowledge reaches at present, it seems probable that heavy forests along the edge of the ghâts, and in their vicinity, have the effect of increasing the local fall of rain along this belt; but if this is the case, the westerly winds will be drained of their moisture, even to a greater extent than if there were fewer forests, and there might possibly be less condensation and less rainfall in the dry country beyond.

Nevertheless, there is no doubt that every grove and every group of trees in the dry and arid regions of India is a blessing, the value of which cannot be estimated too highly; and though we may not be able to raise extensive forests in these districts without irrigation, yet a great deal can be done by improving and extending the wooded tracts along the borders of the dry country. Save in the most arid districts, mere protection from cattle, cutting, and fires is sufficient to produce, not, it is true, dense forests but brushwood and grass, which certainly, in a small way, serve to keep the ground cooler and moister. There is no country in India where the beneficial effects of mere preservation of brushwood tracts in a dry climate may be better studied than in some of the Native States of Rajputana. Such Chiefs as the Rajah of Kishengarh, the Thakúrs of Bednore and of Hamírgarh, and their ancestors, have set a good example, which the forest officers of the British Government will do well to imitate.

Whatever views may be held regarding such slow, gradual, and limited effects of forest growth upon the climate, there is no doubt that, in a hilly country, forests enable us in many cases better to husband the existing water supply for irrigation. Whether the drainage from the hills is collected in tanks and artificial lakes, as is the case in Rajputana and Mysore, or

whether it is employed to feed canals, to carry water, fertility, and wealth into distant districts, the object is the same—to utilise to the utmost the water supply available during the year. Experience in India and elsewhere has proved that where hills are bare, the rain rushes down in torrents, carrying away loose soil, sand, and stones, silting up rivers and canals, breaching or overflowing dams and embankments; but that where the hills are covered with meadows, fields, or forest, the superficial drainage is gradual, the dry weather discharge of rivers regular, the springs better supplied; in short, all conditions united to insure the more regular and useful filling of tanks and canals; and in many cases the attainment of these objects is in itself of sufficient importance to justify measures for the preservation and improvement of natural woodlands, and for guarding against the denudation of hilly tracts. The preservation of forests may be made necessary by other objects of a cognate nature; for instance, in order to protect roads and bridges in hilly tracts, to guard against landslips, to prevent the formation of ravines, the silting-up of rivers, and other mischief which may follow the denudation of hilly tracts.

Nor is it at all impossible, that in some cases the preservation and extension of arborescent vegetation may have a beneficial effect upon the sanitary condition of a district. The late unhealthiness of Mauritius has generally been ascribed to the gradual denudation of the island; and public feeling there has been so strong upon the subject that legislative measures have been proposed to facilitate the re-foresting of the waste lands. Too much importance must not, however, be attached to the value of forests in India from a sanitary point of view. The district of Ratnagiri, which is situated south of Bombay, between the coast and the ghâts, has been densely inhabited for centuries; and in consequence mainly of the practice prevailing in the Concan, of manuring the fields with ashes of leaves and branches, the whole district has gradually been denuded of trees, save groups of pollards, which are annually lopped for manure, groves of palms, and fruit trees in gardens. Yet this district is proverbially healthy; more so than the adjoining British districts, Tanna and Colaba in the north, and Canara in the south; nor is there any proof that the rainfall of the Ratnagiri district is less than it ought to be with regard to its position on the coast. Nevertheless, even here denudation has done serious mischief. Several of the short tidal streams of this part of the Concan, which were navigable in former times, have gradually silted up, and are now useless, except for very small craft.

Beyond all doubt, however, forest conservancy in India has become necessary in order to meet the growing demands for timber, wood and other forest produce. Under the influence of peace and security, which all parts of the country are enjoying under British rule, prosperity is increasing rapidly in most

provinces. The peasantry of entire districts, who have hitherto been content to live in miserable huts, desire to build good substantial houses and to use better furniture. Hence an increased demand for bamboos, wood, and timber. In certain forest tracts the watershed of the timber trade has entirely changed since the American war has stimulated the export and cultivation of cotton. From the forests of North Canara, the former export of timber was all seawards, and fortunately it was not of great importance, and has not exhausted the forests. The export inland was trifling. Since the American war, however, a considerable demand of timber and bamboos for the cotton producing tracts east of Dharwar has sprung up, and a brisk trade is now carried on in that direction. Similar changes in the lines of export have taken place in the Kandeish Dangs, and elsewhere in many places. The rapid construction, within the last twenty years, of railways, canals, and public buildings of all descriptions, has created large demands for timber and wood. Although a considerable proportion of the railway sleepers laid on the Indian lines were brought from Europe, the demand in India for this item alone has been so heavy, that within the last fifteen years extensive forest tracts have been denuded of nearly all their standing marketable timber, to furnish railway sleepers. In every respect, therefore, the drain upon the resources of our Indian forests is heavier now than it was formerly, and is likely to remain so; and unless the small extent of remaining valuable forest is carefully managed, with a view to its regeneration, there will certainly be difficulties hereafter. For the law that an increased demand will always produce an increased supply does not hold good when the supply requires one hundred years to become available.

It is not, however, timber only the permanent supply of which we must endeavour to secure for the benefit of coming generations. There seems no prospect of finding coal in sufficient quantity in North-Western India. Railways and steamers in the Punjab and Sindh burn wood, and will probably continue to do so. At the same time, the demand for fuel in the towns and villages of Northern India will increase. Hence the necessity of extensive plantations, and of careful management both of the scanty woods on dry ground, and of the more productive forests along the banks of the rivers. These are the future requirements of India in this respect, and they must always hold the first place in the consideration of public measures of this nature. For, after all, if it were not for the benefit of the people of India, there would be no reasonable ground, for undertaking the arduous task of preserving and improving its forests. On the other hand, the interests of trade may justly claim to be heard in this matter. Sandal-wood, cutch (the produce of *Acacia catechu*), caoutchouc, lac, teak timber, and numerous other kinds of forest produce, are important articles of export

from India, and the maintenance of a sufficient supply to satisfy the requirements of trade is a matter of great moment. Nor does the export of these articles benefit the merchant only; it adds largely to the prosperity of the people of India.

These are the principal reasons why forest conservancy in India is necessary. A more difficult question is, how the objects we have in view are to be attained. Forests, like all other landed property, can be either in the hands of the State, of towns, village-communities, or other public bodies or corporations; or, lastly, in the hands of private individuals. There are thus two ways of accomplishing our object. Either the State must, by legislation, subject all forest property to a certain control for the public benefit, reserving to itself the right of compelling the proprietor to manage it in accordance with certain rules and prescriptions laid down from time to time, as circumstances may require. In many European countries this plan has been more or less successfully pursued, and in most is still maintained with regard to forest land which is the property of municipalities, villages, and public corporations. In France, for instance, the management of all these classes of forests is under the control of the State Forest Department; and, upon the whole, the system works well. Similar arrangements exist in Prussia and in other German countries. Private forest property, however, is practically free in most European countries. Nearly all European States hold large forest domains in the hands of Government, and this makes it possible to maintain an efficient body of public forest officers, with practical experience, competent to manage or to control the forests of other proprietors.

Italy has, it is true, of late years pursued a different policy, but its success is doubtful. The greater portion of the State forests and of the ecclesiastical estates, which might have been formed into State forests, have been sold; and the project of a law, placing such tracts of private and other woodlands, as may from time to time appear necessary, under the control of the State forest officers, has repeatedly been discussed, but as yet without any practical result.

In India, everything tends to show that the State must endeavour to retain as many of the more important forest tracts as possible in its own hands. In the first instance, this seems the only way of forming an efficient body of forest officers with practical experience. In the second instance, the control of forests in the hands of other proprietors will, in India, always be a peculiarly difficult matter. Not that the formation of village forests, and their regular management under the control of State forest officers, would not be a most desirable object to aim at. Certainly, the advantages of well-managed communal forests are great. The public property thus created cannot readily be converted into cash, and wasted by an improvident generation. It yields a fixed and certain annual revenue, avail-

able for roads and other public improvements. In many parts of continental Europe, long experience has shown that well-managed communal forests increase the prosperity of communities and their inhabitants, facilitating at the same time the development of healthy municipal institutions. And though at present it would be premature to expect the people of India to appreciate the advantages of such institutions, the time will certainly come when the importance of proposals tending in this direction will be recognised. But so much seems certain, that the State ought not to undertake the control of forests of other proprietors until its own forest officers have the needful practical experience, and are competent to manage them to the best advantage.

The general principle, that the more valuable forest should as far as practicable be formed into State forest domains, has, after much opposition, gradually been acknowledged in most provinces of India; and in some provinces the process of demarcating these State forests has made considerable progress. From a late return, I gather that the area of the reserved forests in the provinces under the government of India, outside those of the Madras and Bombay Presidencies, but including the forests leased from native princes, is estimated at 9,800 square miles, or 6,200,000 acres. In India, these forests are called "reserved forests," as they are formally reserved from sale, except by the express permission of the Supreme Government. By way of comparison, I may mention that the Crown forests of England cover 112,000 acres, the State forests of France upwards of 2,500,000, and the State forests of the kingdom of Prussia upwards of 6,000,000.

The area here given for India, however, includes a large extent of forests which are not the property of the State, but which are only leased for a definite time from Native Chiefs and Princes. It also includes a large extent of woodlands, which have not yet been finally demarcated, or in which, though the State may be the proprietor, the surrounding agricultural population exercise rights of pasture, of cutting wood and timber, and, in some cases, of clearing ground for cultivation. In a few provinces, such as Sindh and the Central Provinces, circumstances were favourable at the time of demarcation, and the State acquired at once absolute proprietorship of these forest lands free of all prescriptive rights. In other provinces, the gradual adjustment and extinction of these rights, which materially interfere with the protection and systematic management of the forests, will be a work of time, which will require much care, patience, and conciliatory treatment of the people concerned. In this, as in other matters relating to the administration of forests in India, we are guided by the experience gained in this country, and on the Continent of Europe, in dealing with rights of commons and other prescriptive rights in forest land. There has been much thoughtless

talk is if the natives of India, in burning the forests and destroying them by their erratic clearings, were committing some grave offence. If the matter is carefully analysed they will be found to have the same sort of prescription which justifies the commoner in the New Forest to exercise his right of pasture, mast, and turbary. Such rights, when the public benefit requires it, must be extinguished; but the wild tribes of India have the same claim as the holder of prescriptive forest rights in Europe to demand that provision be made for their reasonable wants and requirements. The State forest domains in India are thus in course of formation only; the greater mass of them is in a poor and exhausted state; many are burdened with heavy rights of pasture and other prescriptive demands. For many years to come they must be worked most sparingly; considerable sums must be expended on the demarcation and survey of boundaries, on roads, the clearing of streams, on plantations, and other improvements. At the same time, all these operations and the protection of these extensive tracts require large and expensive establishments. These are the reasons why the administration of the public forests in India has not yet within the short period of its existence yielded any large surplus revenue to the State. The gross income of the Government forests in British territory has within the last three years fluctuated between £420,000 and £465,000; but the charges have been high, and the highest net surplus of the year has amounted to £160,000 only, and in another year fell as low as £86,000.

Nevertheless, there is no doubt that financially also, the formation of State forests in India, and their methodical management, will eventually be an important source of revenue and strength to the Government. In this, as in all matters, the first commencement has been difficult. The idea of providing for coming generations may to many appear an unnecessary waste of time; but when the present generation begins to derive substantial benefits from these measures, then their value will doubtless be fully recognised.