CHAPTER IV.

AGRICULTURE.

According to the 1881 census returns agriculture supported about 485,000 people or 75·98 per cent of the population:

Bijápur Husbandmen, 1881.

Age.	Males.	Females.	Total.
Under Fifteen ...	90,027	85,636	175,663
Over Fifteen ...	151,312	158,189	309,501
Total ...	241,339	243,825	485,164

Husbandmen.

As regards strength the Bijápur landholders come in the following order: Lingáyats, Kurubars, Raddis, Musalmáns, Mhárs, Mángs, Bráhmans, Maráthás, Lamáns, and Vadars. The houses of poor husbandmen have mud roofs and stone or brick walls with one or two rooms and almost always a cattle shed attached. Well-to-do husbandmen live in the better sort of houses built of stone and mortar or burnt bricks, sometimes with an upper storey and with a whitewashed mud-roof. Tiled roofs are rare, partly because the people do not like tiled roofs, but chiefly because tiles are difficult to get, as village potters do not know how to make them. However poor he may be a husbandman has a brass pot and a plate and one or two wooden cots. Their farm stock generally includes a plough with one or two pairs of bullocks, a seed drill, a harrow, one or two reaping hooks and weeders, an iron crowbar, a hoe, and a hatchet. Since the 1876-77 famine they generally keep one year's supply of food grain in store, and the well-to-do store as much as two-fifths of a ton to twenty tons (2·100 *khandis*). Bráhman, Lingáyat, and Raddi husbandmen are generally sober, orderly, clean, religious, and, since the 1876-77 famine, thrifty. As a class few of them are skilful. They dislike change and have no special appliances. In addition to what they make from their fields landholders add perhaps a fourth to an eighth from cart driving, dairy produce, spinning, cotton ginning, blanket weaving, wool selling, labouring, or fowl rearing. Hardly any addition is made from hunting, fishing, or snaring. On a rough estimate thirty to fifty per cent of the cultivators are in debt. The chief causes of indebtedness are marriage and other ceremonies and bad seasons. Many stand in need of advances for seed for which they

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have to pay at twenty-five to thirty per cent interest calculated on the market price of the seed at the time it was advanced. The 1876-77 famine has caused a considerable increase of thrift among the landholders and a growing unwillingness to part with land.

Soil.

The soils belong to two main classes, the black or *yeri bhumi* (K.) and the red called *masab* or *musáli* (K.). By far the greatest part of the open country, whether the surface rock is trap or gneiss, consists of the black ground or *yeri bhumi* which is geologically the ruins of rock changed by the addition of organic matter. The black soil has great moisture-holding power and when unmixed with any foreign matter is so clayey as to be almost impassable in the rainy season, while in the hot weather it gapes in deep fissures through which the fertilizing air passes sometimes more than six feet below the surface. The first heavy rains bear the sun-dried surface film into the fissures so that without any labour the upper layer of earth is year by year partly renewed. The best black soil overlies either sandstone, clay porphyry, or felspar at a depth of six to thirty feet The salt in the rich deep black soil of the Don valley is itself nourishing to some crops, particularly to wheat, and through its property of absorbing moisture is beneficial to all crops. The richness of the Don valley, the granary of Bijápur, is proverbial.[1] The soil wants ploughing only once in three or four years; a single heavy fall of rain is enough to give a fair crop, and in the years when the crops of the country round utterly fail the Don valley gives some return.[2] Occasionally on the banks of the Krishna and the Bhima where the under-layer is a gray clay slate, or where it is charged with muriate of soda or natron, the black soil is of the worst quality. The chief fault in this soil, which is known as *karal* (K.), is that water seems to pass through it without wetting it. It bears seldom except in rare seasons of such unusual wetness that the crops on other soils are destroyed. When, as in parts of Bádámi and Hungund, black soil is mixed with gravel, particularly with lime gravel, and when the layer of earth is shallow, it is called *garab* (K.). This is a poor soil which requires much manure. In parts of Bádámi shallow beds of this soil are much injured by an underlying alluvial limestone, which, especially in wet seasons, destroys the crops. When it is mixed with alluvial soil left by overflowing streams the black soil turns to brown or *musubu* (K.) and this is of greater richness than the black. A brown soil found at the skirts of ridges and uplands coloured by iron-bearing gravel or *garasu* (K.) is much less rich than the alluvial brown. The red sandy mould called *masab* or *musáli* which is chiefly found near the sandstone hills of Bádámi, Bágalkot, and Hungund, is generally poor though under manure and a proper system of tillage it yields fair crops. Red soils yield only the early rain or *mungári* (K.) crops, as they do not hold moisture and after

[1] Of the richness of the Don valley the Hindustáni saying is: *Don pike kon kháiga, Don ne pike kon kháiga*; the Maráthi saying is, *Jar pikel Don, tar kháil kon; na pikel Don, tar kháil kon,* both mean, If the Don bears crops who can eat (them); if the Don bears no crops who can eat? The Kánarese sayings are: *Donella belidare, onella jola,* If the Don crops are good every lane is a *jvári* field, and *Beladare Doni, bellilla oni,* If the crops come up it is the Don; if not it is a road.

[2] Bom Gov. Sel. CXIX. 3.

the rain ceases are not suited for the growth of any crop. On the other hand, black soils are well suited for the late or *hingári* (K.) crops, but early crops do not succeed owing to the uncertain fall of rain. In 1820 as they bore pulses and the red *jvári* which was the staple article of food and supplied fodder for the cattle, patches of red soil near villages were highly valued and every husbandman tried to have a share of them.[1] Since 1820 these red soil patches seem to have lost their special value. The trap country to the north of the district consists of long swelling downs separated by narrow belts of light brown or black soil. These belts are rich along the river beds, and gradually grow shallower and poorer towards the skirts and underslopes of the intervening uplands. In the slopes the soil is often not a foot deep and many patches of soil are separated by hundreds and thousands of yards of naked rock. Within the trap region all hills and unarable uplands are bare of trees, even of bushes.

SOIL.

Of an area of 5734 square miles or 3,670,291 acres, 3,596,820 acres or 97·99 per cent have been surveyed in detail. Of these 396,338 acres or 11·02 per cent are the land of alienated villages. According to the revenue survey the rest contains 2,851,957 acres or 89·29 per cent of arable land; 107,266 acres or 3·98 per cent of unarable; 8 acres of grass or *kuran*; 146,281 acres or 4·57 per cent of forest; and 94,968 acres or 2·96 per cent of village sites, roads, and river beds. Of the 2,851,957 acres of arable land in Government villages 684,432 acres or 24·00 per cent are alienated. In 1882-83 of the whole arable area of 2,851,957 acres, 2,499,704 acres or 86·26 per cent were occupied.

ARABLE AREA.

According to the 1882-83 returns the farm stock included 9839 carts, 50,916 ploughs, 201,752 bullocks, 104,948 cows, 25,790 he-buffaloes, 67,423 she-buffaloes, 8505 horses including mares and foals, 361,518 sheep and goats, and 4923 asses. The details are:

STOCK.

Bijápur Farm Stock, 1882-83.

Sub-Division.	Carts.		Ploughs.		Bullocks.	Cows.	Buffaloes.		Horses, Mares and Foals.	Sheep and Goats.	Asses.
	Riding.	Draught.	One Pair.	Two Pairs.			Males.	Females			
Indi ...	21	1262	1948	2289	25,878	12,209	3346	6440	1236	56,350	565
Sindgi ...	28	705	2831	2240	26,819	12,826	3278	7373	1196	70,487	472
Muddebihál.	56	888	4059	3383	21,227	10,803	2998	7887	1024	33,132	541
Bijápur ...	...	1173	2854	1997	22,747	13,521	2635	6883	1388	49,040	711
Bágevádi ...	10	1162	3789	2092	30,503	14,286	4292	9370	1315	41,555	836
Bágalkot ...	36	1995	7057	1099	27,773	16,598	3053	11,240	1122	43,142	882
Bádámi ...	358	1283	8132	573	25,294	14,641	2794	8668	589	41,561	466
Hungund ...	48	914	5836	937	21,511	10,064	3394	9562	635	26,251	450
	457	9382	36,306	14,610	201,752	104,948	25,790	67,423	8505	361,518	4923

A large holding varies from 500 to 300 acres, a middle holding from two hundred to fifty acres, and a small holding from fifty to twenty-five acres. In 1882-83, including alienated lands in Government villages, the total number of holdings was 65,452 with

HOLDINGS.

[1] Marshall's Statistical Accounts, 117.

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an average area of 38·19 acres. Of the whole number of holdings 2929 were of not more than five acres, 6258 were of five to ten acres, 17,439 of ten to twenty acres, 11,519 of twenty to thirty acres, 8992 of thirty to forty acres, 6685 of forty to fifty acres, 8557 of fifty to a hundred acres, 2406 of 100 to 200 acres, 384 of 200 to 300 acres, 131 of 300 to 400 acres, and 152 above 400 acres. Of holdings above 400 acres forty-nine were in Bijápur, thirty-two in Bágevádi, twenty-two in Bágalkot, fourteen each in Indi and Sindgi, ten in Hungund, seven in Muddebihál, and four in Bádámi. The details are :

Bijápur Holdings, 1882-83.

SUB-DIVISION.	ACRES.							
	1-5.	6-10.	11-20.	21-30.	31-40.	41-50.	51-100.	101-200.
Indi ...	197	421	1675	1544	1430	1036	1568	489
Sindgi ...	275	712	2168	1210	1320	1446	1375	373
Muddebihál ...	210	506	1837	1236	945	886	1012	225
Bágevádi ...	228	625	2299	2202	1296	818	1400	437
Bijápur ...	307	437	1691	1500	1500	927	1488	444
Bágalkot ...	447	1028	2787	1627	968	492	707	195
Bádámi ...	920	1604	2610	1096	538	265	370	68
Hungund ...	350	925	2372	1104	995	815	637	175
Total ...	2929	6258	17,439	11,519	8992	6685	8557	2406

SUB-DIVISION.	ACRES.			TOTAL.	RENTAL.	TOTAL AREA.
	200-300.	300-400.	Over 400.			
					£	
Indi ...	69	14	14	8457	140,748	379,081
Sindgi ...	74	22	14	8989	161,182	385,997
Muddebihál ...	17	11	7	6892	141,714	248,561
Bágevádi ...	67	34	32	9433	194,021	416,178
Bijápur ...	76	15	49	8434	126,892	393,283
Bágalkot ...	42	20	22	8335	116,778	258,717
Bádámi ...	19	5	4	7499	84,012	181,755
Hungund ...	20	10	10	7413	112,601	236,127
Total ...	384	131	152	65,452	1,077,946	2,499,704

The occupants who have holdings of over 100 acres are Maráthás, Raddis, Lingáyats, Kurubars, Kabligers, Chhatris, Telis, Bráhmans, Gujars, Jains, Mhárs and Mángs, Lamáns, Berads, and Musalmáns. As a rule the large holdings are tilled by the occupants, in a few cases they are sublet.

A PLOUGH.

A pair of bullocks can plough in a day one acre of dry-crop land, half an acre of garden land, and three-quarters of an acre of rice land. With one pair of bullocks a husbandman can till sixteen to thirty acres of dry-crop land, ten acres of garden land, and twelve to sixteen acres of rice land.

FIELD TOOLS.

The chief field tools[1] are the plough, which is of two kinds the heavy or *negali* (K.) and the light or *ranti* (K.), the heavy hoe or *ukki-kunti*, (K.) the light hoe or *yadi* (K.), the seed-drill or *kurgi* (K.), and the

[1] From materials supplied by Ráo Sáheb Náráyan Chintáman Soman, Mámlátdár of Bijápur.

rake or *rágol*. In their use and make these field tools are generally the same as the Belgaum field tools of which a detailed description is given in the Belgaum Statistical Account. Both the heavy or *negali* and the light or *ranti* plough is a thick *bábhul* log shaped by the village carpenter, with its lower end curving forward at an obtuse angle from the main block. The share, which is an iron blade one and a half feet long by three to four inches broad and four to twelve pounds in weight, is let into a socket and fixed by a movable iron ring to the wooden point beyond which it juts about six inches. The handle is fixed to the block by a thick rope passed along the beam and tied to the yoke, so that the strain of draught braces the different parts of the plough. The light plough is drawn by two bullocks and the heavy plough by eight bullocks. One man guides the heavy plough and a boy drives the bullocks sitting on the yoke. The share of an eight-bullock plough passes about nine inches into the ground, of a four-bullock plough about four inches, and of a two-bullock plough about two inches. A plough drawn by eight bullocks costs £3 (Rs. 30), one drawn by four bullocks about £1 10*s.* (Rs.15), and one drawn by two bullocks about 14*s.* (Rs. 7). A plough lasts two years. The heavy hoe or *ukki-kunti*, is a *bábhul* beam five feet long and one foot broad with an iron blade four feet long by four inches broad running horizontally along its length and supported by two wooden stays one and a half feet long which are fixed in the beam about six inches from each end. This beam is joined to the yoke by two small beams or rafters about eight feet long. The heavy hoe is drawn by two to eight bullocks and is so made that by lengthening or shortening the rope the blade passes several inches under the ground or merely scrapes the surface. It is used for loosening the ground, covering the seed, breaking clods, and uprooting shrubs and weeds. When more than four bullocks are yoked, one man drives the first four bullocks and a second drives the rest. An eight-bullock heavy hoe or *ukki-kunti* costs £2 16*s.* (Rs. 28), a four-bullock hoe £1 8*s.* (Rs. 14), and a two-bullock hoe 8*s.* (Rs. 4). The chief parts of the heavy hoe last seven or eight years. The small parts want yearly repair. The small hoe or *yadi* consists of a *bábhul* beam two and a quarter feet long by six inches broad, with two stays like the heavy hoe. In the lower end of each stay a blade of iron about six inches long is fixed horizontally to the beam. The two blades from the two stays fall in a line leaving an open space three or four inches long in the middle. The beam is joined to the yoke by two small rafters each about nine feet long. Two such hoes are generally fastened to one yoke and are drawn by a pair of bullocks driven by two men. The hoe is used for clearing the land of grass and weeds between the rows of a growing crop, and also for loosening the surface. The small hoe or *yadi* costs 9*s.* (Rs. 4½). The seed-drill or *kurgi* is a block of *bábhul* wood four to five feet long by one foot broad with three to four square prongs set into it at right angles. Into each prong is fixed a hollow bamboo about three feet long and one inch in diameter. These meet at the top in a wooden cup. Into this cup, which is about six inches in diameter and is bored with holes, the driver keeps steadily pouring seed which passes through the bamboo tubes and prongs into a neat furrow cut in front

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FIELD TOOLS.

of each tube by the sharelike iron tip of the prong. The block of wood is joined to the yoke by two small beams or rafters about eight feet long. The seed-drill never requires more than two bullocks. It is made by the village carpenter and is used in sowing all kinds of grain except rice. It costs about 6*s.* (Rs. 3). Except the beams, prongs, and iron tips, which should be replaced every year, the seed-drill lasts seven or eight years. The rake or *rágol* consists of a piece of blackwood about one and a half feet long with seven to nine teeth and a bamboo handle four to five feet long. It is used for gathering straw and costs about 2*s.* (Re. 1). It lasts eight or ten years. Besides these field tools there are the bladed pickaxe or *byadgu* for cutting shrubs and plants costing 2*s.* (Re. 1), the pickaxe or *gudali* for digging costing 2*s.* (Re. 1), the reaping sickle or *kudgol* costing 1*s.* 3*d.* (10 *as.*), the weeding sickle or *khurpi* costing 9*d.* (6 *as.*), the axe or *kodli* costing 1*s.* 3*d.* (10 *as.*), the spade or *sanaki* costing 9*d.* (6 *as.*), and the *motin halli* a wooden tripod for the winnower to sit on costing 2*s.* 6*d.* (Rs. 1¼).

IRRIGATION.

With scanty and uncertain rainfall and few irrigation works the district suffers from periodical want of water. The reason why so few irrigation works are found in a district which stands so much in want of irrigation is that there are almost no sites suitable for such small works as are within the means of the people. In Indi, Bijápur, and Bágalkot a large area close to the villages is watered from wells and small streams. In 1881-82, excluding wells, thirty-two irrigation works watering 1372 acres yielded a consolidated yearly revenue of £461 (Rs. 4610) of which the irrigation share is seventy-eight per cent or about £360 (Rs. 3600) or an average acre rate of 5*s.* 3*d.* (Rs. 2⅝). Of the thirty-two irrigation works seventeen, or one work for every 338 square miles, are repaired by the Public Works Department and the remaining fifteen, which are classed as temporary, are maintained by the people. Of 355

Reservoirs.

reservoirs and ponds 105 are in Bádámi, sixty-eight each in Bágalkot and Hungund, forty-seven in Bágevádi, forty-one in Bijápur, twelve in Muddebihál, ten in Sindgi, and four in Indi. The water of only fifteen of these reservoirs is used for irrigation. Of these fifteen, one at Sirur in Bágalkot waters eighteen acres of land and yields a consolidated assessment of £4 6*s.* (Rs. 43). The remaining fourteen reservoirs are at Bánshankari, Tolachkod, Govanki, Kendur, Nandikeshvar, and Nilgund, and two each at Párvati and Timságar all in Bádámi, at Kamatgi and Mamdápur in Bijápur, and at Inchgeri in Indi. The Bánshankari lake about three miles south-east of Bádámi, formerly known as Harishchandra Tirth, is believed to have been built some two hundred years ago by two Jains Shankershet and Chandrashet. It has solid masonry retaining walls on four sides and three sluices on the east. It is 362 feet square and has a greatest depth of twenty-five feet. It is supplied by a perpetual spring which rises in a swamp about a mile above the lake. The same spring also supplies the Tolachkod reservoir which is a weir across a stream at Bánshankari. In the hot weather, even after a bad monsoon, this spring runs over two and a half cubic feet the second. Its water is used in raising garden crops in about twenty acres of land. The Govanki reservoir about six miles and

the Nandikeshvar reservoir about seven miles east of Bádámi are also fed from unfailing springs in the sandstone rocks. The Kendur reservoir about six miles north of Bádámi, said to have been built before the Muhammadan conquest, has a catchment area of twenty-two square miles. When full its area is 530 acres and it has a greatest depth of twelve feet. The water never dries and is used in watering 125 acres of land. Plans and estimates have been (1881-82) submitted for raising the waste escape level and the dam and strengthening the weir. The Nilgund reservoir, about ten miles west of Bádámi, when full has an area of 230 acres but has hitherto been little used for irrigation. In 1882-83 the reservoir was improved and repaired and the area under command increased to 347 acres. At Párvati, twelve miles north-east of Bádámi, are two reservoirs a large and a smaller. The smaller has been repaired by stopping leaks and improved by raising the waste weir 2·44 feet, thus increasing the capacity from twenty to twenty-nine million cubic feet. The area watered by these reservoirs is seventy-nine acres. At Timságar twelve miles north of Bádámi are two small reservoirs holding water only during the monsoon. At Kamatgi twelve miles east of Bijápur is a reservoir said to have been built about 1620 by Ibráhim Adil Sháh II. the fifth Adil Sháhi king of Bijápur (1580-1626). It was intended as a pleasure resort with garden and water pavilions which are now in ruins. Its natural catchment area is small, but it was increased by a catch-water drain which has been breached and as the reservoir is on a stream which would be the waste channel from the proposed Don reservoir, the restoration and improvement of this work are in abeyance. When full, the reservoir covers seventy and waters fifty-six acres. At Mamdápur in Bijápur are two lakes or reservoirs called for distinction the Great and the Small.[1] As shown by a Persian inscription cut in stone both were built at a cost of about £21,250 (50,000 *huns*) by Sultán Muhammad (1626-1656) of Bijápur in A.D. 1633.[2] Both reservoirs are formed by earthen dams faced on the water side by strong well built stone walls, damming two streams, at a place where a small gneissic and sandstone inlier has formed most favourable sites. The large reservoir is probably the largest existing reservoir in the Presidency, of native construction. When full its surface area is 864 acres or 1⅓ square miles. The dam is 2662 feet long, or just over half a mile, and its greatest height is twenty-seven feet nine inches. The escape for surplus water is cut in the hard quartzite rock. It has several outlets for irrigation each consisting of a series of round holes cut in stone at different levels closed by wooden plugs in the usual native method. These holes communicate with masonry culverts through the earthen dam. Some of these outlets, which are no longer used and are a source of leakage, are being permanently closed. The rest are being fitted with modern sluice gates worked from the top of the dam by a screw. This work is in hand and will be completed before June 1884.

[1] Mr. R. B. Joyner, C.E.

[2] Details are given under Places.

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Except in seasons of unusual drought the water in this reservoir lasts throughout the year. The smaller lake to the east of the large lake when full has a surface area of 428 acres and a greatest depth of twelve feet. The length of the dam is 1180 feet. The reservoir generally dries in March or April and grain is sown in the bed. The area watered by these two reservoirs is about 674 acres. It yields a yearly consolidated land and water revenue of £278 8*s.* (Rs. 2784). This includes the area held by free holders or *inámdárs.* The area of the Government lands is 433 acres and the consolidated yearly revenue is £177 (Rs. 1770). The old records show a much heavier rate of assessment before the reservoirs were taken over by the English Government in 1848, which was probably liable to remission in bad years. The average acre rate is now 8*s.* (Rs. 4). Of £177 (Rs. 1770), £152 (Rs. 1520) or 7*s.* (Rs. 3½) the acre would represent the water share and £25 (Rs. 250) or 1*s.* (8 *as.*) the acre the land share. Except in occasional years of unusually good rainfall both of these reservoirs are of larger capacity than their catchment works serve to fill. At Inchgeri in Indi, a stream was dammed by a solid masonry wall. The work of damming was begun in 1856 by the revenue department and finished in 1857 by the public works department. The lake has a sluice gate and water-courses for leading the water to the neighbouring fields. In 1874 the wall was breached by a heavy flood and the work has not since been used for irrigation. In Hungund about sixty-seven acres of land are watered by streams which draw their supply from a feeder of the Krishna which has a good cold weather flow derived from the granite hills of the Nizám's country.

Wells.

According to the Collector's return for 1882-83 there were in all 6119 wells of which 3575 were with steps and 2544 were without steps. Of 6119 wells, 534 with steps and 566 without steps were in Indi; 789 with steps and 306 without steps were in Sindgi; 416 with steps and 161 without steps were in Muddebihál; 410 with steps and 422 without steps were in Bijápur; 700 with steps and 207 without steps were in Bágevádi; 161 with steps and 211 without steps were in Bágalkot; 298 with steps and 385 without steps were in Bádámi; and 267 with steps and 286 without steps were in Hungund. The average depth of wells is twenty feet in Indi, thirty feet in Sindgi, thirty to thirty-five feet in Muddebihál, forty feet in Bijápur, forty to sixty feet in Bágevádi, seventy-five to a hundred feet in Bágalkot, thirty feet in Bádámi, and eleven to forty-two feet in Hungund. Wells built on all four sides with stone and mortar, generally large enough for two or three leather-bags to work at a time, cost about £500 (Rs. 5000) and are rarely built solely for watering. Wells with one side of built stone masonry and three sides faced with dry stone masonry, cost £100 to £300 (Rs. 1000-3000), and wells twenty or thirty feet deep and the same in diameter, without masonry except on the side where the leather-bag works, where a wall either of dry stone or stone and mortar is built to support the lifting frame, cost £20 to £40 (Rs. 200-400). The 1876-77 famine gave a considerable impulse to well sinking as fodder was so scarce that many wells were dug simply for watering *jvári* for

fodder. Most of these famine wells were temporary holes dug in the ground with a wooden frame on one side with which to raise the water. By these wells the total irrigated area of the district was (1878) raised from 9000 acres to 18,667 acres. For garden tillage water is raised from wells by a *mot* or leather-bag. The bag is five and a half feet in diameter with a leather trunk three and a half feet long and one and a half feet in diameter attached to the bottom. To the top of the bag an iron ring about an inch thick and about seven feet in circumference is fastened. To this ring a four-handed iron catcher is attached and at the point where the four hands meet a large rope is fastened. To the lower jaw of the mouth of the trunk a second smaller rope is fastened. At the top of the well, where the bag is to work, a masonry trough is built. In this two wooden uprights are fixed about four feet apart and a small beam with a pulley in the middle is laid breadthwise over the two uprights. At the bottom of the uprights a wooden roller is fixed. Over this structure the bag is worked by flinging the ring rope over the pulley and the trunk rope over the roller. The other ends of these ropes are tied to a yoke drawn down an inclined plane by two and sometimes by four bullocks. When the bullocks move backward up the inclined plane the bag goes down into the well and is filled; then the bullocks move forward and bring the bag to the top of the well where it is emptied by pulling the ring rope, the water running through the trunk. The initial cost of working a bag including bullocks is £10 (Rs. 100). The monthly working charges, consisting of two men's wages and the keep of animals, amount to about £1 10*s.* (Rs. 15). Irrigation from streams is carried on in the same way as from wells. A wooden frame called *kávili* is set on the bank and the water is raised in a bag. Sometimes a hole is dug a little from the bank, large enough to allow the leather-bag to work and the channel is cut from the stream into this hole. A well is thus formed and is always fed from the stream.

The Don Scheme.

In 1877-78 several irrigational sites were examined and plans and estimates for several works were prepared. Of these projects the Don river scheme is the most important. This comprises a very large storage reservoir on the river with canals on the left bank commanding 193,881 acres or 303 square miles of land in the Bijápur, Sindgi, and Bágevádi sub-divisions. The site of the reservoir dam is on the river about ten miles south-east of Bijápur. The design is for an earthen dam 14,300 feet long and eighty-nine feet in greatest height. The area of the catchment basin is 419 square miles. The area of surface of full supply in the reservoir is 18·64 square miles, and the contents of the lake are estimated at 10,065 millions of cubic feet. The facilities for a work of this size are very great. A rocky saddle, affording a length of 1800 feet of waste weir, is available, and the canals cross the watershed and could be carried on so as to command the whole area between the Don and the Bhima. The canals are designed to have a total length of 134 miles excluding sixty-two miles of main branches or distributaries and will command 193,881 acres. The work is estimated to be capable of watering 23,434 acres yearly, and the net revenue is

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IRRIGATION.

The Don Scheme.

estimated at £11,717 (Rs. 1,17,170). The estimate for the complete scheme is £221,615 (Rs. 22,16,150). In 1879-80 the surveys in connection with this project were completed. A series of borings were made on the dam site and preparations made for sinking a trial well.[1] As the estimates for land compensation for this project were found too large, further investigation of the scheme has been stopped. Another irrigational work which is now under construction is a reservoir at Muchkundi four miles south of Bágalkot. In 1877-78 complete plans and estimates were drawn up and sanctioned. The lake is designed to be formed by an earthen dam sixty-five feet in greatest height and 720 feet long. The area of the lake when full will be 1059 acres and its contents 765 millions of cubic feet. The catchment area is 28½ square miles. Two canals, led off from the lake, are designed to command an area of 14,400 acres. The average yearly supply of water is calculated to suffice for 1036 acres of irrigation and the net revenue is estimated at £600 (Rs. 6000). The work has the advantage of providing very large storage room at a comparative small cost. No economy would be obtained by lowering the level of full supply as the cost of deepening the waste weir is more than that of raising the dam which is a remarkably short one. The estimated cost of the scheme is £13,876 (Rs. 1,38,760). During 1879-80 the work was carried on as a famine relief work and up to the 31st of March 1883 the concrete dam with masonry faces, which will be sixty feet high when completed, was raised to within six feet of its full height. The sluices were fixed and the masonry work raised to the same level as the dam work. The cutting of the main channel was nearly completed for the first four miles. An aqueduct, one bridge, two inlets, and two vertical falls on the main canal were also completed.

MANURE.

All classes of husbandmen enrich their fields with manure, which consists of house sweepings, ashes, cattle litter, and all kinds of rubbish and decayed vegetable matter. These are laid together in a pit and when the whole has decayed into a powder it is carted and spread over the fields by the hand. Except rice land all watered land is manured once or twice a year. Dry-crop land, sown with the early monsoon or *mungári* crops, is also manured, red soil yearly and black soil if possible once in three years. Probably one-eighth of the early crop or *kharif* land is manured yearly. The quantity of manure varies with the quality of the soil from 600 *mans* an acre on the poor lands of the north to 200 to 300 *mans* on the richer lands of the south. Manure is seldom sold. The nominal acre cost of manuring garden lands is estimated at 8*s.* to 10*s.* (Rs. 4-5)

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[1] The results of the trial pits and borings made in the Don river in 1879 show that the rock is reached thirty-five feet from the bed of the river and forty feet from the highest point on the left bank of the river. In the bed of the river there was below the surface, black soil for four feet, red soil with sand for four feet, white sandy clay for six feet, pure reddish brown clay for fourteen feet, stiff dark brown clay for three feet, limestone for one foot, and pure dark brown clay for three feet. On the left bank, there was, below the surface, black soil for fifteen feet, clay with sand for six feet, yellow clay and white lime with sand for eleven feet, yellow clay with sand for four feet, and yellow clay with fragments of stones for four feet. Messrs. F. D. Campbell and R. B. Joyner.

and of manuring dry-crop lands at 6*s.* to 8*s.* (Rs. 3-4). Except that land sown one year with cotton or linseed is next year sown with Indian millet wheat or gram, no regular change of crops is observed.

Tillage is either dry *kádáramba* (K.) or wet *perirámba* (K.) Owing to scarcity of water for irrigation there is very little wet tillage. The dry field tillage varies according as the soil is black or red and sandy. To bring black soil fields under tillage for the first time is a heavy and costly task as the fields are overgrown with a creeping grass called *hariáli* (M.) or *karige* or *nat* (K.) Cynodon dactylon. The roots of this grass form a thick mat eight or ten inches below the surface, choke all other vegetable growth, and if not cut year after year gain more strength and spread over a wider area. The better the land the stronger are the bushes and the thicker is the *hariáli*. The field tool used in breaking up the field is the heavy plough or *negali* drawn by five pairs of bullocks, of which one pair if not two pairs must be of a superior breed costing £7 to £12 (Rs. 70-120) the pair. As the country is too hot and dry for them buffaloes are not used. The heavy plough is set to work immediately after the rains are over, that is in October or November, when the ground is soft enough to let the plough sink below the matted mass of the *hariáli* roots. The work of cutting the roots, locally called *nat khapane*, is so slow that seven months are required to bring twenty-four acres of waste land under tillage. During this time the roots are cut out and the field is ploughed lengthwise breadthwise and cornerwise. When the work of cutting the roots is over the high priced bullocks are sold as their keep is costly. Including the price of animals, their keep, and the hired labour, the charges for seven months amount to £70 (Rs. 700). This outlay is beyond the means of ordinary husbandmen who to minimise the expense combine together and help one another. Sometimes occupants lease their land for twelve to twenty years to husbandmen on condition that the *hariáli* is rooted out, the husbandman agreeing to pay the occupant one-third to one-fourth of the produce. After being worked by the heavy plough the land is left very rough and when the clods are a little softened by the first rains, the ground is two or three times harrowed and is cleared of weeds and roots by the hand. In the first year the field is sown with cotton or gram, but the outturn is trifling. In the second or third year wherever *hariáli* shows itself, hand hoeing is wanted. The surface ground is then levelled either by a harrow or by a clod-breaker drawn by a pair of bullocks. For these two years the crops grown are the same as those of the preceding year but the outturn is better. At the end of the third season the field is supposed to be in a state of full tillage or *khirde*. After three years the surface is every year cleaned by a scalping knife. As they are shallower and are not liable to be overgrown with *hariáli*, red soils do not want the heavy plough. As red soils, especially sandy reds, are apt to harden and cake after rain, they are kept as loose and friable as possible. The sandier the land the more harm heavy rain causes. Two or three showery days in a fortnight are enough for the red soils until late in the season in September-October, when the grain is filling in the heads,

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TILLAGE.

a good deal of rain is required. The first operation in a red soil field is to enrich it with ordinary manure in March. In April, after the first showers have begun, the field is at intervals ploughed three times with the smaller plough and the manure spread through the soil. In May, the stubble of the previous crop and weeds are cut out by the scalping knife, which in loose sandy soils is fixed so as to pass two or three inches below the surface. The stubble and the weeds are gathered either by a rake or by hand. In June when the south-west rains have begun, or, if the rains hold off, in July or even as late as August, the seed is sown by the drill machine. If the sowing is delayed till August the surface has again to be cleaned by the scalping knife. During the first four or five weeks after sowing the heavy hoe or *uki-kunti* is used twice. After the second hoeing the plants are too high and they are weeded by hand generally twice in the course of the second and third months. As soon as the heads of corn begin to form, guards are set over the field, some on foot, others mounted on stages or on trees, to keep off pilferers and drive away birds, birds particularly, if not kept off, working great havoc among the standing crops. The birds are kept off by all sorts of noises, by slinging small earthen pellets, and sometims by shaking leaf strings hung from one stage or tree to another. Often a girl is mounted on one of these stages with her reeling machine or *nalu ratti*, at times bellowing at the birds, or slinging a pellet, or cracking a large hempen whip. For scaring deer, hares, wild boars, and jackals, a wooden post six to eight feet high is sunk upright into the middle or into a corner of the field, and a whitewashed earthen jar is laid on the top, and a blanket or a waistcloth, or a woman's robe in rags is hung from the pole, so as to look like the figure of a man or a woman. After the crops are reaped they are thrashed. A space twelve to twenty yards in diameter is wetted and beaten till the surface is smooth, hard, and firm. The corn is taken to this space. If it is Indian millet or millet the heads are cut off and thrown on the threshing floor, and if it is wheat or gram the plants are thrown. The farmer's whole stock of bullocks is yoked abreast and they are driven, muzzled, round a post in the centre. As soon as the whole is thrashed, on some day when the breeze is neither too light nor too heavy the grain is winnowed. A man stands on a *metinhalli* or wooden tripod and the grain is handed to him in a four-sided tray made of close mat-work. The front and broadest edge of this tray has no rim, and over this the winnower drops the grain and chaff, the grain falling to the grouud and the chaff blowing to one side.

CROPS.

According to their seed times and harvest times, the Bijápur crops may be divided into two classes early or main rain that is *kharif* (M. H.) or *mungári* (K.) and late or cold weather that is *rabi* (M. H.) or *hingári* (K.). The *kharif* crops, which are sown in the latter part of June or the beginning of July and harvested in November and December, want rain in June, July, and August, and are injured by heavy rain after the grain is in ear. To this class of crops chiefly belong the red variety of Indian millet *jvári* (M.) or *ken-jola* (K.) Sorghum vulgare, *bájri* (M.) or *saji* (K.)

Penicillaria spicata, rice *bhát* (M.) or *bhatta* (K.) Oryza sativa, *mug* (M.) or *hesru* (K.) Phaseolus radiatus, *pávta* (M.) or *avri* (K.) Dolichos lablab, *udid* (M.) or *uddu* (K.) Phaseolus mungo, *chavli* (M.) or *alsandi* (K.) Dolichos catjang, *kulthi* (M.) or *hurli* (K.) Dolichos biflorus, *tur* (M.) or *togri* (K.) Cajanus indicus, *til* (M.) or *yallu* (K.) Sesamum indicum, and *ambádi* (M.) or *pundi* (K.) Hibiscus cannabinus. All these are grown in red or *musáli* soils; and millet, *til*, *udid*, *mug* and *rála* (M.) or *navani* (K.) Panicum italicum also in black soils. In the more sandy soils all these early crops are sown in the latter part of June, but in the more mixed and loamy sands they are sometimes sown in July or early August. For the *rabi* (M.) or *hingári* (K.) crops which are sown only in black soils in September and the beginning of November and are harvested from the end of December to the beginning of April, rain is wanted in August and September. To this class chiefly belong white Indian millet *jvári* (M.) or *bili-jola* (K.) Holcus cernus, cotton *kápus* (M.) or *hatti* (K.) Gossypium herbaceum, wheat *ghau* (M.) *godi* (K.) Triticum æstivum, gram *harbhara* (M.) or *kadli* (K.) Cicer arietinum, linseed *javas* (M.) or *alshi* (K.) Linum usitatissimum, and *kardai* (M.) or *kusbi* (K.) Carthamus tinctorius.

In 1881-82, of 1,759,816 acres held for tillage, 143,358 acres or 8·14 per cent were fallow or under grass. Of the remaining 1,616,458 acres 317 were twice cropped. Of the 1,616,775 acres under tillage, grain crops occupied 1,209,078 acres or 74·78 per cent; 949,386 of them under Indian millet Sorghum vulgare, 136,924 under spiked millet Penicillaria spicata, 97,746 under wheat Triticum æstivum, 9269 under Italian millet Panicum italicum, 5004 under rice Oryza sativa, 3926 under *sáva* Panicum miliare, 622 under barley Hordeum hexastychon, 304 under maize *makái* (M.) or *mekke jola* (K.) Zea mays, and 5897 under other grains of which details are not given. Pulses occupied 73,360 acres or 4·53 per cent, of which 37,866 were under gram Cicer arietinum, 14,720 under cajan pea Cajanus indicus, 7929 under *kulthi* Dolichos biflorus, 432 under *mug* Phaseolus radiatus, and 5413 under other pulses. Oilseeds occupied 71,094 acres or 4·39 per cent of which 29,697 were under linseed Linum usitatissimum, 15,521 under jingelly seed Sesamum indicum, and 25,876 under other oilseeds. Fibres occupied 255,790 acres or 15·82 per cent of which 255,367 were under cotton Gossypium herbaceum, and 423 under Bombay hemp Crotalaria juncea. Miscellaneous crops occupied 7453 acres or 0·46 per cent of which 1135 were under sugarcane *us* (M.) *kabbu* (K.) Saccharum officinarum, 1469 under tobacco *tambáku* (M.) or *hage soppu* (K.) Nicotiana tabacum, and 1637 under chillies *mirchi* (M.) or *mensinkai* (K.) Capsicum frutescens. The remaining 3162 acres were under various vegetables and fruits.

Indian Millet.

The following are the details of some of the most important crops: Indian millet *jvári* (M.) or *jola* (K.) Sorghum vulgare with, in 1881-82, 949,386 acres or 58·72 per cent of the whole tillage area is grown over the whole district. Of Indian millet there are two varieties the red or *ken-jola* (K.) and the white or *bili-jola* (K.). The red or *ken-jola* is grown as

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an early crop and is sown in the latter half of June where the soil is sandy and towards the end of July where the soil is mixed and strong, and is reaped in October or November, about a fortnight after the end of the south-west rains. The white or *bili-jola* also called *shiálu-jvári* is grown as a late crop in black soil in the latter half of September, and is gathered in the end of March or the begining of April. When the crop is good, white *jvári* is both more profitable and less injurious to the land than red *jvári*. Before sowing Indian millet, the field is thrice ploughed by the light plough and the seed is dropped through the seed drill. The chief points of difference between the red and white varieties are that the seed of the white variety is white, and of the red variety brownish; the stalk of the white variety does not grow to more than half the height of the red variety and contains much more sugar. The grain of the white variety is superior in flavour and the proportional shortness of the stalk seems to enable the earth to bear many more plants. On the best black lands in good years the plants of white *jvári* are closer and the heads are better filled than those of any other grain. Indian millet and millet are the staple food of the people.

Wheat.

Wheat *ghau* (M.) or *godi* (K.) Triticum æstivum with, in 1881-82, 97,746 acres or 6·04 per cent of the tillage area is grown over the whole district, chiefly in Bágevádi, Bijápur, Sindgi, and Muddebihál. Three chief varieties of wheat known as *támbda* or red, *khapli*, and *holi* are grown. The *támbda* or red wheat is the best and is like the ordinary English wheat. The *khapli*, grown as a watered crop in garden lands, is a bearded wheat, like the English barley except that the grain is oblong. The *holi* an inferior wheat is grown in rice lands after the rice crop has been carried. As a dry-crop wheat is grown in pure black soils, in mixed soil called *mali*, and in a gray soil formed from felspar rocks. Of these the mixed or *mali* lands are the best suited for the growth of wheat. The wheat of the Don valley has a high local value; the salt in the soil instead of injuring nourishes the wheat plant. The land is carefully prepared and manured before the seed is sown. The sowing begins soon after the heavy burst of the north-east or Madras monsoon which generally happens in October and sometimes in early November. The quantity of seed ranges from twenty-six to thirty pounds the acre. The crop which wheat follows best is cotton preceded by Indian millet. In some places wheat alternates with sugarcane and gram. Occasionally *kardai* or safflower is raised between the rows of wheat two to six feet apart. The safflower ripens one month later and does not interfere with the growth of the wheat. The wheat crop takes three to three and a half months to ripen and is reaped in March. Dry-crop wheat is much affected by atmospheric changes. It is affected by rain twenty or twenty-five days after the seed is sown. It is also affected by heavy dews, by excessive cold following cold-weather rain, by cold northerly and westerly winds, and, at the time when the crop comes to bearing, by a cold and northerly wind locally called *kadki* or *harishchandra vára*. In Sindgi the ill effects of too much moisture are counteracted by throwing manure or ashes on the field. Wheat is not the staple food of the

people; only the rich classes eat it every day. In ordinary years large quantities of wheat leave the district. Some of it goes to Sholápur, some to Athni in Belgaum, and some to Jamkhandi. The rest finds its way to Vengurla and Kárwár and from those ports is shipped to Bombay. The Bijápur husbandmen do not send grain on their own account to Bombay or even to Vengurla. They either take it for sale to the nearest railway station or they dispose of it to Belgaum traders.

Rice.

Rice *bhát* (M.) or *bhatta* (K.) Oryza sativa with 5004 acres or 0·30 per cent of the tillage area, from want of irrigation works, is not one of the chief crops of the district. In Bádámi rice is grown from the water of some of the larger reservoirs. Before sowing them the rice fields are flooded till they are two or three feet deep in mud, and are divided into a number of rectangles four or five yards long and two or three yards broad, with banks three or four inches high. Cattle dung and the roots of old rice are trodden and kneaded into the mud either with a broad hoe by men waist-deep in mud or by a plough drawn by two buffaloes. The ploughing can only be done towards the edges of the tract where the depth of the mud is somewhat less than in the middle parts. If the dung falls short or if the cultivator is poor, the leaves of *karanj* Pongamia glabra, or of *kodiaga* Galega tinctoria, which are not such good fertilizers as the dung are kneaded into the mud. After the kneading is over the little spaces are levelled and smoothed by a wooden hoe or toothless rake one and a quarter or two feet broad and the earth which sticks to this tool serves to make the little embankments. In August the field is ready for sowing. The seed is prepared at home by enclosing it in a cover of twisted grass which is sunk for a day in a well, then taken out, and kept in the house for two days. It is again sunk in the water for a day. At the end of this second soaking it sprouts and when sprouted is sown broadcast in the field. As the water is always flowing or oozing off a fresh supply is let on to the land once a week or oftener. Two complete weedings and an almost daily removal of single weeds are needed during the latter part of January when the crop is ready for reaping. When the rice is ready for reaping the ground is still so muddy that one man wading in the mud cuts the rice and hands the bundles to another who carries them to some dry raised spot on the border of the field. This part of the labour is always paid in kind. At the spot where it is taken, the corn is thrashed by beating the heads against a board. Following the same process a second crop is raised from the same land, the interval between the sowing of the first crop and the reaping of the second being a fortnight. Of these two crops the second which is sown in February is better than the first, because the first crop which is sown in August is exposed when nearly ripe to a cold dry wind which prevents the heads from filling.

Cotton.

Cotton *kápus* (M.) or *hatti* (K.) Gossypium herbaceum with, in 1881-82, 255,367 acres or 15·89 per cent of the tillage area is grown as a late crop mostly in the black soils of the Sindgi, Bágevádi, Muddebihal, and Hungund sub-divisions. Of these Hungund raises

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CROPS. *Cotton.*

the best cotton as it has much excellent soil, has a generally even and sure rainfall, and, till the 1876-77 famine, had a population, which was noted for its laborious and careful husbandry. As in Belgaum three kinds of cotton are grown, Gossypium arboreum or *devkápus* (M.) that is god's cotton used in making sacred threads, Gossypium indicum or *jvári-hatti* (K.) that is country cotton grown in pure black soils, and Gossypium barbadense or *viláiti hatti* (K.) that is New Orleans cotton grown in brown soils. In 1882-83 the area under New Orleans cotton was only 731 acres. The detailed account of cotton cultivation given in the Belgaum Statistical Account applies to Bijápur. No crop takes more out of the soil than cotton. Cotton never thrives in the same field for two successive years. It must be varied with Indian millet, wheat, or gram. The cotton fields are enriched with the ordinary manure. Fresh manure is believed to heat the soil and therefore the soil is manured the year before the cotton is sown. Before sowing cotton, partly by the hand and partly with the hoe, the field is cleared of the stumps of the previous crop, and, if the field is overgrown with the *karige* (K.) grass, it is ploughed with the larger plough or *neglái*. After the ground is cleared the clods are broken by a heavy wooden beam. In the latter part of August the land becomes fit for sowing. The seeds are rubbed in fresh bullock dung and water and are then dropped through the hollow tubes of the seed drill or *kurgi* (K.). The seed drill is immediately followed by the hoe which closes the drills. The seed leaves show in six to eight days, and in about a month the plants are three or four inches high. The farmer then works the grubber between the rows of seedlings, rooting out young weeds and grass, the surface is turned, and the soil is heaped at the roots of the young plants. Weeds are also removed by labourers with a sickle. The crop is ready for picking late in February or early in March. A good crop yields five and sometimes six pickings; a poor crop not more than three or four. The detailed account given in the Statistical Account of Belgaum of the attempts that were made between 1845-46 and 1853-54 to introduce New Orleans cotton applies to the three southern sub-divisions of Bágalkot, Bádámi, and Hungund which at that time formed part of Belgaum. Between 1850 and 1854 desultory efforts were made to introduce American cotton into the northern sub-divisions, which, except Bijápur which was under Sátára, then formed part of Sholápur. Both in the north and in the south the efforts to introduce New Orleans cotton failed. In 1851-52 in Indi, Sindgi, Bágevádi, and Muddebihál seventy-six acres were under New Orleans; in 1852-53 the area rose to 730 acres; and in 1852-53 the area fell to almost nothing. In 1854 as it was not in demand the Collector of Sholápur recommended that, until the country was opened either by good roads or by a railway, no further attempts should be made to grow New Orleans.[1] In 1857-58 experiments with Egyptian cotton were made in fifteen Bágalkot and in nineteen Bádámi villages. The results were so

[1] Walton's Cotton, 58.

unsatisfactory that Mr. Seton Karr, the Collector feared that the seed had been damaged in transit. It was sown much more thickly than usual, but not nearly the usual number of plants came up. Mr. Seton Karr thought that if it was watered the Egyptian cotton might succeed, but he found the people unwilling to make further experiments. Only in a fraction of the fifty acres which were planted with Egyptian cotton, had the seed sprouted and the outturn was miserably small. The Bombay Chamber of Commerce found the sample which was sent to them much injured by insects. The cleaned cotton would be spotted and uneven in staple. Still the staple was long fine and silky and where uninjured by damp or insects was very strong. If carefully cleaned the Chamber thought it would probably be equal to good Egyptian which on the 16th of July 1858 sold at 8½*d.* to 9*d.* the pound in the Liverpool market. In 1859-60 a further experiment with fresh Egyptian seed was tried in four Bádámi, three Bágalkot, and fifteen Hungund villages. The seed was distributed free of charge and the husbandmen were told to sow it early and to pick the cotton as soon as it ripened. The seed came up in two of the Bádámi villages and failed in two; it sprouted in six of the Hungund villages and failed in nine; and it came up in one Bágalkot village and failed in two. Mr. Seton Karr thought that the seed was good and sound; and that the results were extremely poor. [So complete was the failure, that the husbandmen were unwilling to sow any more Egyptian seed.[1] In 1864-65, within the present Bijápur district, 2731 acres were under New Orleans and 355,070 acres under local cotton.[2] The staple of the New Orleans was pronounced very inferior. In 1865-66, 3268 acres were under New Orleans and 278,494 acres were under local cotton. An attempt was made to improve the local cotton by a large importation of Berár Akote cotton seed. This seed was not procured until very late in the season. It was sent through Sholápur and the monsoon had burst before it reached its destination. The result was that much of the seed did not arrive at the different sub-divisional head-quarters in time for sowing. The results of nearly fifty tons of seed seem to have been meagre and disappointing. The outturn and quality of the other cotton crop were satisfactory. Though the fields were not kept so clean the Bijápur New Orleans was considered equal to the best Dhárwár New Orleans. In the same year (1865) Hungund was recommended as a good place for a cotton ginning factory. In 1866-67, owing to the establishment of a ginning factory at Ron in Dhárwár the area under New Orleans rose from 3268 acres to 8823 acres. The area under local cotton was 262,275 acres. During this season Mr. Blackwell, the district cotton inspector, tried an experiment with twenty-five pounds of Hinganghát seed in Bágalkot. The experiment was reported to have been successful and more than twelve acres were sown with Hinganghát. Mr. Blackwell stated that the seed was much liked by the people, that the cotton was in length, strength, and white-

[1] Cassel's Cotton, 121-123.

[2] Cotton details between 1864 and 1879 are from Walton's History of Cotton in Belgaum and Kaládgi (1880).

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ness superior to the local cotton, and that it was about 1¼*d.* a pound (Rs. 2 a *man*) more valuable. In consequence of this report one ton of Hinganghát seed was sent to Mr. Blackwell partly for distribution and partly for experiment. In 1867-68, owing to increased ginning facilities, the area under New Orleans was 10,645 acres and the area under local cotton was 278,582 acres. Early in the year, the cotton plants, particularly the plants of the local cotton, were blighted and thirty-five per cent of the crop was destroyed. Hinganghát seed was again tried but was unsuccessful. The Bombay Chamber of Commerce reported that a sample grown at Hungund was leafy and wasty, a poor specimen of cotton, such as no European firm would ship. In the same letter they reported favourably on a sample of cotton grown from Kumta seed on the same farm, under the management of Mr. Blackwell, the cotton inspector. In 1868-69, 10,476 acres were under New Orleans and 383,018 acres under local cotton. The blight of the previous season again appeared and did much damage. About 2500 pounds of superior unmixed American seed was distributed in Hungund to restore the seed to its former purity. In 1869-70, 25,543 acres were under New Orleans and 573,279 acres were under local cotton. Some interesting experiments were carried on near Hungund by Mr. Blackwell who stayed out during the whole rains to give them the benefit of his personal care and attention. Several superior kinds of cotton, among them American, Hinganghát, and Kumta, were tried, and the operations were carried out with English ploughs and harrows and other improved tools and appliances. No details of the results of these experiments are recorded; they are said to have been on the whole satisfactory. In 1870-71, 11,875 acres were under New Orleans and 379,246 acres under local cotton. During this season the work of the gin-repairing establishments at Ron and Navalgund was limited to Dhárwár villages. This proved a deathblow to the growth of American cotton in South Bijápur. The area fell from 11,875 acres in 1870-71 to 4261 acres in 1874-75. In 1875 it rose to 9149 acres, but owing to the 1876 famine it fell to nothing in 1877-78. In 1878-79 the area again rose to 1935 acres and after some rises and falls in 1882 it stood at 731 acres.

Bad Seasons.

Its uncertain and scanty rainfall makes Bijápur most liable to failure of crops. The earliest recorded failure of rain is the great

1396. Durgádevi Famine. It began in 1396 and is said to have lasted for twelve years, and to have almost depopulated the districts south

1422. of the Narbáda.[1] In 1422 and 1423 no rain fell and there was a grievous famine throughout the Deccan and the Karnátak. In 1422 multitudes of cattle died from want of water; and Ahmad Sháh Bahmani (1419-1431) increased the pay of his troops and opened public stores of grain for the use of the poor.[2] In 1460 a failure of

1472. rain was followed by famine, and 1472 and 1473 were years of severe distress.[3] No rain fell and no crops were sown for two years. The people died or fled the country in such numbers that when rain fell

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[1] Grant Duff's Maráthás, 26. [2] Briggs' Ferishta, II. 405.
[3] Colonel Etheridge's Past Famines, 100.

in the third year scarcely a man was left to till the land.[1] During the season of 1629-30 no rain fell in the Deccan, and a famine and pestilence ensued.[2] In 1631 the Moghal army under Ásaf Khán besieged Bijápur. The supplies of the Moghal army were cut off and this caused much distress in the Moghal camp. Men and beasts perished from hunger and the rupee price of grain rose to about two pounds (1 *ser*).[3] In 1666 the Moghals again besieged Bijápur and their supplies were again cut off. For about eighty or a hundred miles round Bijápur not a trace of grass or fodder was left and the Moghal army was reduced to great straits.[4] In 1685 very little rain fell and grain became so scarce and dear that it was difficult to get a loaf.[5] In 1717 there was a severe famine. Thousands perished and the memory of the hardships undergone lingered with the people for years.[6] In 1784 a severe famine is said to have lasted for three years. Thousands perished and the bones of the dead whitened the ground for miles.[7] In 1791 want of rain again brought famine. No measures were taken to relieve the distress, and so many perished from want of food, that this famine is still remembered as the *Dogi Barra* or Skull Famine, because the ground was covered with the skulls of the unburied dead. *1803.* In 1803 the rainfall was good and the crops promised well but the raids of Pendhári freebooters turned a year of plenty into a year of famine. The disturbed state of the country prevented the late crops being sown, and the early crops were destroyed by the ravages of troops. Abundance of water and plenty of grass lightened the distress. Grain sold at four to eight pounds (2 - 4 Bengal *sers*) the rupee, and in Bijápur it rose to three pounds (one and a half *sers*). No relief measures were taken, but in Bágalkot some of the merchants fed the starving poor. The distress was great, and people died of want. Apparently because *rági* Eleusine corocana was the only grain which could be procured, the famine is remembered as the *Rági Barra*.[8] *1818-1820.* Between 1818 and 1820 want of rain caused a famine in Muddebihál, Indi, and Bijápur, and in the petty divisions of Hippargi in Sindgi and of Mangoli in Bágevádi. The distress lasted six to nine months. In Indi there was a good crop, but it was soon consumed as numbers in search of food crowded in from the Nizám's country. Indian millet sold at twelve to sixteen pounds (6 - 8 Bengal *sers*) the rupee. The poor were reduced to eating parched tamarind seeds and numbers both of men and cattle are said to have perished. No relief measures seem to have been undertaken. *1824-25.* In 1824-25, in Indi, Muddebihál, Mangoli, and Hippargi a failure of rain was followed by a scarcity. *Jvári* sold at thirty-two pounds (16 Bengal *sers*) the rupee. No deaths from famine and no relief measures are recorded. *1832.* In 1832-33 want of rain caused a failure of crops and *jvári* sold at sixteen pounds (8 Bengal *sers*) the rupee. Import duties were taken off grain, and relief works were started. Mr. Arbuthnot, the

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[1] Briggs' Ferishta, II. 494.
[2] Grant Duff's Maráthás, 46.
[3] Elliot and Dowson, VII. 30.
[4] Elliot and Dowson, VII. 278.
[5] Elliot and Dowson, VII. 322 ; Grant Duff's Maráthás, 149.
[6] Silcock's Bijápur, 48.
[7] Silcock's Bijápur, 48.
[8] Colonel Etheridge's Past Famines, 104.

Chapter IV. Agriculture.

BAD SEASONS.

Sub-collector at Bágalkot, distributed food to the people of Indi, Muddebihál, Mangoli, and Hippargi, and also employed the people in making roads. Many are said to have died from hunger, and the mortality among cattle is also said to have been great.

1853-54.

In 1853-54, owing to a failure of crops in Sholápur, numbers of people came to Bijápur. At Indi *jvári* prices rose to fourteen pounds (7 Bengal *sers*) the rupee. In other parts of the district it sold at fifty pounds (25 Bengal *sers*). The destitute were employed in making roads in Indi and Hippargi. No deaths are said to have occurred from want.

1863-1867.

Between 1863-64 and 1866-67 a series of years of scanty rainfall caused repeated failures of crops. The high price of cotton in consequence of the American War had enriched the people and large supplies of grain were brought from Sholápur, and the distress was little felt. In 1865-66 a sum of £1000 (Rs. 10,000) was sanctioned for relief works. There was a failure of crops in 1871 which told severely on the people, and for several months many of the poorer classes were scrimped for food. In 1872-73 there was a partial failure of crops.

1871-72.

1876-77.

The scanty rainfall[1] of 1876, 6·13 compared with an average of about 22·13 inches, led to failure of crops and distress amounting to famine over the whole of the district. The central portions suffered most severely. Of the eight sub-divisions, the early crops were bad in two, Sindgi and Bádámi, and in the remaining six they were very bad. Besides the failure of the early crops there were only a few showers in September and October, and the small area of cold-weather crops, which were sown in the hope of more rain, withered. With high grain prices, Indian millet at eighteen instead of fifty-six pounds the rupee, and no demand for field work, either in harvesting the early or in preparing land for the late crops, large numbers of the poorer classes became destitute. The need for Government help began early in September. Fodder was scarce, and large numbers, in some cases whole families, in other cases only a few members of each family, in the hope of saving their cattle, drove them to the Kánara forests and to the Nizám's country. Distress grew sharper in November when all hope of rain was over, and private grain-holders were holding back their stores. In some places the markets were almost empty, and no grain could be bought at any price. The distance from the railway on one side and from the sea-coast on the other side kept outside dealers from entering into the trade. The grain difficulty became most serious. Some relief works had to be closed, and others could not be opened, because there was no grain for the people to buy. Under these circumstances Government imported 246,000 pounds of *jvári* from Belgaum and Sholápur and kept it as a reserve in case of the failure of the local dealers or contractors who had engaged to supply the people on the relief works. The presence of this grain had a wonderful effect. Stores were brought out, supplies became plentiful all over the district, and prices

[1] The account of the 1876-77 famine owes much to additions made by Messrs. H. F. Silcock, C. S., and A. Wingate, C.S., C.I.E.

rapidly fell.[1] Between March and June distress increased. Large numbers, taking their families, moved into the surrounding districts, the Nizám's country, Sholápur, Belgaum, and Dhárwár, wherever grain was said to be cheaper and fodder less scarce. At the close of the hot weather, a promising fall of rain in June was followed by so dry a July that the crops suffered severely. Distress and anxiety continued unabated till they were relieved by timely and plentiful rainfall in September and October. At the close of November the demand for special Government help had ceased and all the relief works were closed. At the same time the season of 1877 was anything but good. The crops were injured by the early drought and afterwards by excessive rain, and the harvest was not more than half the average yield. In April 1878 relief works had to be re-opened. The following summary shows from month to month the different phases through which the distress passed and the measures which were taken to meet it.

In September 1876, as no rain fell, except in a few villages in Bádámi, Sindgi, and Hungund, almost all the early crops were lost. About the close of the month there were some smart but very local showers. In the hope of more rain the late or *rabi* crops were sown in many places. Owing to demands from Dhárwár, except in Bádámi, grain prices rose considerably, and fodder and drinking water were everywhere scarce. Early in the month local fund relief works were begun, but it soon became clear that some larger provision was wanted. Early in October light showers fell at Bágevádi, Bijápur, and Bádámi, and on the nineteenth there was about an inch of rain at Kaládgi. This did little good as the ground was too parched to be made ready for sowing. Distress deepened, and by the end of the month grain had risen to eighteen pounds the rupee. Large numbers of cattle died from want of fodder, water was scarce, and cases of crime, the result of want of food and work, were reported from several parts of the district. Many people, especially from Indi, left their villages, and large numbers of cattle were sent to the Kánara forests to graze. Relief works, paid from local funds, were opened. At the close of the month Government placed £2500 (Rs. 25,000) at the Collector's disposal to be spent on charitable relief. November passed without rain. The late sowing season was almost over and the few crops that had been sown were lost. The harvesting of the early crops was over, but there was almost no outturn. The water-supply was in many places scanty; in other places water failed so completely that villages had to be deserted. In the north large numbers of cattle died from want of fodder. The distress was very great. Local traders withheld their stores; and, as no outside grain was yet beginning to come in, in many markets there was little grain to buy. Prices rose rapidly from nineteen pounds at the beginning of the month to twelve pounds at the close. Grain thefts were very common. Large numbers of people went to the Nizám's country

[1] Though there was no necessity to use the Government grain, as was at first expected, its presence had a wholesome effect on prices. Part of it which was stored at Kaládgi got damaged and was sold by auction. The rest of the grain was used in relief-houses.

Chapter IV. Agriculture. FAMINE. *1876-77.*

and elsewhere with their cattle, and those that remained suffered sorely from want of food. On the seventh of November the Collector was authorized to make temporary arrangements for the immediate supply of grain.[1] About the middle of the month Government entered into a contract at Belgaum for the delivery of fifty-five tons of grain at Kaládgi, and at Sholápur for the delivery of fifty-six tons, one-third at Dholkheir on the Bhima and two-thirds at Bijápur. On the ninth one-fifth of the Gáikwár's gift of £1000 (Rs. 10,000) was handed over to the Collector to be spent in alms. Public works were started, the daily number of workers rising about the close of the month to 7044. Of 3420, the average daily number for the month, 1073 were able-bodied, expected to do a full day's work and superintended by ordinary public works officers, and 2347 were aged or feeble unfit for a full day's work and superintended by civil officers.[2] December passed without rain and with no change in crop prospects. The Government grain arrived from Belgaum and Sholápur. The sight of it had an excellent effect. Traders immediately brought out their stores and private importations were also begun. As in other famine districts *jvári* prices fell from twelve pounds the rupee at the beginning of the month to 17½ pounds about the close. The mortality among cattle in the three northern sub-divisions, Indi Bijápur and Sindgi, was very great. It was chiefly among the older and poorer animals, as the best had long before been driven to the Kánara forests. Early in the month cholera was slightly prevalent in one sub-division. The numbers of the destitute rose, on public works from 1073 to 8501, and on civil works from 2347 to 8107. The increase in the north was chiefly due to the return of emigrants from Sholápur who came back on hearing that large relief works had been opened. On the twelfth four of the district mámlatdárs were appointed special relief mámlatdárs for their sub-divisions.

In January no rain fell. Grain continued to be brought into the district and the supply was fair. *Jvári* prices remained steady at 17½ pounds the rupee. There was a rather serious outbreak of cholera in four sub-divisions. Probably owing to the return of emigrants the numbers on relief works rose, on public works from 8501 to 38,985, against a fall on civil works from 8107 to 6128. During the month 188 persons were supported on charitable relief. February passed without rain. Grain continued to be brought into the district and the supply was sufficient. *Jvári* prices remained steady at about eighteen pounds the rupee, but, about the close of the month, rose to 17½ pounds. Cholera was increasing. The numbers on relief works fell, on public works from 38,985 to 32,460, and on civil works from 6128 to 4278. On charitabe relief they rose from 188

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[1] Government Resolution 3368, 7th November 1876.

[2] The rates of wages originally fixed for the workers were, for a man 3*d.* (2 *as.*) a day, for a woman 2¼*d.* (1½ *as.*), and for a boy or girl capable of work 1½*d.* (1 *a.*). About the middle of November a sliding scale was introduced, which provided that the money rate should vary with the price of grain when prices rose over sixteen pounds the rupee, and that a man should always receive the price of one pound of grain in addition to one *anna*.

to 201. In March a few showers in Indi helped the garden crops. The supply of grain continued sufficient, but *jvári* prices rose from 17½ pounds in the beginning of the month to sixteen pounds towards the close. Cholera continued general but was decreasing. Emigration was at a standstill and people were coming back. In consequence of the introduction of the task system on relief works, many left them and went to their homes. The numbers fell, on public works from 32,460 to 22,413, against a rise on civil works from 4278 to 6202, and on charitable relief from 201 to 392. In April from two inches to half an inch of rain fell in the five sub-divisions of Bijápur, Sindgi, Bágevádi, Bágalkot, and Hungund. In Bijápur and elsewhere the ponds were filled and all fear of a water famine was at an end. Except in Bágevádi and Muddebihál, grain importations continued sufficient. The rupee price of *jvári* rose from 16½ pounds at the beginning of the month to 14¾ pounds about the close. Fodder was very scarce. Very many cattle died and others were fed on *nim* leaves. Emigrants were returning in large numbers. In Hungund there was great distress among Vadars, Lambánis or Lamáns, and other wandering tribes. Cholera was increasing and small-pox was prevalent. Government relief houses were opened. The number of workers rose on public works from 22,413 to 35,805, on civil works from 6202 to 7550, and on charitable relief from 392 to 1030. In May there were smart showers over the whole district except in Muddebihál. In Hungund and Bágalkot sowing was begun in many places. The importation of grain continued, but in Muddebihál and Hungund the supplies were insufficient. Cartage rates had risen high chiefly owing to want of draught cattle; to hire a cart from Sholápur to Hungund cost £4 (Rs. 40). In Hungund grain was imported from Andni in the Nizám's country, and in Bágevádi camels were used to bring grain from Belári. The rupee price of *jvári* rose from 14½ pounds at the beginning of the month to 13½ pounds at the close. Emigrants were returning with cattle, but of these large numbers died from want of fodder. Cholera and small-pox continued prevalent. Owing chiefly to the greater vigour shown in helping people to leave their villages large numbers began to flock to the relief works. The numbers on relief increased, on public works from 39,897 about the beginning of the month to 77,617 about the close, and on charitable relief from 1030 to 2994, against a fall on civil works from 7562 to 6956. On the nineteenth a further sum of £2000 (Rs. 20,000) was placed at the Collector's disposal for charitable relief. On the twenty-second Government sanctioned a sum of £2000 (Rs. 20,000) to be lent to dealers to help them to import grain into the district on condition that it should be sold at a certain rate above cost price. A few dealers took the advances, but chiefly from want of carriage, the project was not a success. Early in June there was a good fall of rain all over the district. Sowing operations were begun. In many places, on account of the want of cattle, ploughs and harrows were drawn by men instead of by bullocks. Later in the month the rain held off, sowing was stopped, and the crops, where they had come up, began to wither. The want of cattle, for all available animals were engaged in field work, the heaviness of the roads, and the

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FAMINE. *1876-77.*

difficulty of crossing the flooded streams and rivers continued to make the importation of grain most difficult. Small quantities were brought from Sholápur on men's heads and in carts drawn by men, but, except in the north, the supply was insufficient, solely owing to the want of carriage. The district got such a name that traders could not get carters, who had full occupation in more favoured places, to undertake the journey. The rupee price of *jvári* rose from thirteen pounds at the beginning of the month to eleven pounds at the close. The high prices caused much distress and people again began to leave the north of the district. Fodder was very scarce; a bundle, which in ordinary years cost 4½*d.* (3 *as.*), could not be had for 8*s.* (Rs. 4). Large numbers of cattle died and cholera continued general. The numbers on public works rose from 64,983 to 71,764, and on charitable relief from 2994 to 10,699. On civil works they fell from 7418 to 7212. In the early days of July a few showers, and in some places the sowing of the early crops was resumed. Later on rain held off and sowing was again stopped. Where they had come up the crops were withering. Cartage rates rose very high. A cart from Sholápur to Muddebihál cost £4 (Rs. 40) and from Kaládgi to Bijápur £1 10*s.* (Rs. 15). Even at this price almost none could be had. For the greater part of the month the only grain imported was brought by labourers on their heads. Afterwards from Belgaum, Belári, and Ráichor, cart-loads of grain began to find their way into the district. The rupee price of *jvári* rose to an average of 9½, and in some places to 7½ pounds. These prices caused extreme distress; large numbers of people were forced to eke out their pittance of grain by gathering wild herbs. In some parts the Mhârs and Mángs, who, from the great mortality among cattle, had at first fared rather well, were reduced to misery. Large numbers left for Sholápur and the Nizám's country. Fodder continued very scarce, and cholera was still deadly though decreasing. About the end of the month some smart showers greatly helped the half-withered crops. The fall was generally scanty, but in some places there was enough to allow sowing to be resumed. The numbers on relief rose, on public works from 71,764 to 74,302, on civil works from 7212 to 10,429, and on charitable relief from 10,699 to 13,656. On the third a further sum of £2500 (Rs. 25,000) was placed at the Collector's disposal for charitable relief. Nearly the whole of August passed with only a few showers. The early crops withered and in some places were lost. Grain, chiefly on men's heads, continued to come from Belgaum, Sholápur, and Belári. The rupee price of *jvári* rose to an average of 9¼ pounds. The high prices, joined to the want of demand for field labour, caused much distress. People who, up to this time, had kept from the relief works, began to flock to them in numbers. Especially from Muddebihál and Bágevádi, emigration still went on, and cattle were driven to Athni in Belgaum. During the month, for non-able-bodied relief labourers, a municipal bread shop was opened in Muddebihál, where bread was sold at cost price. Heavy rain, beginning on the twenty-eighth, continued till the end of the month, greatly reviving such of the early crops as remained alive. In some parts

the sowing of cotton and the cold-weather crops was begun, and in the south of Bijápur *bájri* and *rági* were being harvested. The numbers on relief rose, on public works from 74,302 to 106,383, and on civil works from 10,429 to 13,364, against a fall on charitable relief from 13,656 to 13,202. On the second of August a further sum of £5000 (Rs. 50,000) was added to the Collector's discretionary allowance. In September about 2½ inches of rain fell at Kaládgi and 1·86 inches at Hungund. The prospects of the early harvest were much improved, and the late harvest sowings, though somewhat delayed, were in progress. Promising crops of green grass greatly lowered cartage rates. In spite of the heaviness of the roads, considerable quantities of grain were brought from Sholápur and Belgaum. At the same time, encouraged by the improved prospects, local dealers opened their grain-pits, and *jvári* prices fell from 8½ pounds at the beginning of the month to 10¼ near the close. The condition of the people was much improved and large numbers left the relief works to return to their fields. In Sindgi and Indi, except a small civil agency gang, all relief works were closed. The numbers on relief fell, on public works from 104,242 at the beginning of the month to 8482 at the close, and on civil works from 14,839 to 11,507; on charitable relief they rose from 13,202 to 18,772. Early in October rain fell heavily, in places damaging the early and keeping back the sowing of the late crops. In some parts the *bájri* harvest was in progress and the new grain was finding its way to market. Many dealers opened their grain-pits, but the want of cattle and the heaviness of the roads prevented prices from falling below 12¾ pounds the rupee. In the first week of the month all the public works in Muddebihál were closed. The numbers on relief fell, on public works from 8482 in the beginning of the month to 1432 near the close; on civil works from 11,507 to 4993; and on charitable relief from 18,772 to 14,949. In November the weather continued favourable. On an average 1·09 inches of rain fell. The early crops were being harvested but in Bágevádi and the southern sub-divisions they were much damaged by excessive rain. The sowing of gram, wheat, and other cold-weather crops was in progress. A break in the rainy weather much aided grain importations, and *jvári* prices fell from fourteen pounds in the beginning of the month to 19½ pounds about the close. During the month, ague, diarrhœa, and dysentery were prevalent throughout the district. The numbers on relief fell, on public works from 1730 about the beginning of the month to twenty-two at the close, on civil works from 4015 to 426, and on charitable relief from 14,949 to 5118. By the end of the month all relief works and relief houses were closed. In the latter half of December there was a general and good fall of rain. The harvesting of the early crops continued and the late sowings were finished. On the twenty-second of the month 2638 persons were on charitable relief.

The following statement of Indian millet prices and of persons receiving relief, shows that during the first two months of 1877 grain kept pretty steady at seventeen pounds the rupee; that its price went on rising rapidly till it reached 9¼ pounds in September; that it then began to decline and fell to twenty pounds in December.

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FAMINE, 1876-77.

Special Measures.

As early as December 1876 the numbers on relief works reached 16,608. In January they rose to 45,113. By lowering wages and enforcing the task test they fell to 36,738 in February and 28,615 in March. From March they rapidly advanced till in August they reached 119,747. They then quickly declined falling to 52,519 in September and to 2128 in November when the works were closed. The numbers on charitable relief rose steadily from 188 in January to 13,656 in July, and, after a slight fall to 13,202 in August, rose to 18,772 in September. They then rapidly fell to 14,949 in October and 2638 in December. The details are:

Bijápur Famine, 1876-77.

MONTH.	AVERAGE DAILY NUMBERS.				AVERAGE PRICES.	
	On Relief Works.			On Charity.	*Bájri.*	*Jvári.*
	Civil.	Public.	Total.		Pounds the Rupee.	
1876.						
November ...	2347	1073	3420	...	15½	14⅝
December ...	8107	8501	16,608	...	15⅝	15⅛
1877.						
January ...	6128	38,985	45,113	188	17 1/16	17¼
February ...	4278	32,460	36,738	201	17⅛	17¼
March ...	6202	22,413	28,615	392	16⅞	16⅞
April ...	7550	35,805	43,355	1030	15⅝	15½
May ...	7418	64,983	72,401	2994	13½	14
June ...	7212	71,764	78,976	10,699	11⅛	12⅛
July ...	10,429	74,302	84,731	13,656	9¼	9⅜
August ...	13,364	106,383	119,747	13,202	9⅜	9¼
September ...	10,771	41,748	52,519	18,772	9 1/16	9⅛
October ...	8567	1556	10,123	14,949	...	12 1/16
November ...	1722	406	2128	5118	21⅝	17⅝
December (Up to 22nd).	...	...	...	2638	23¾	20½
Total ...	94,095	500,379	594,474	83,839	...	...
Average ...	7238	38,491	45,729	6986		
Total Cost Rs.	...	...	2,308,728	275,029		
			25,83,757			

At the beginning of the famine, smiths, carpenters, and basket-makers found useful employment in making tools and baskets for the labourers on relief works. To indigent and respectable weavers and spinners, men who could be trusted and who were not fitted to work as labourers, raw material was given, and when the cloth or thread was brought back, the difference in price between the raw and worked materials was paid. At Bijápur, where there is a large number of Musalmán women who never appear in public, a sub-committee was formed, composed of a European officer as President and native members chosen from the different classes of the people. The duty of the native members was to visit all parts of the city; find out any deserving cases of indigent women who could not appear in public; and ascertain whether they were able to do any work. All cases were reported to the committee, and where it seemed right grants were made. To those who could do no work free grain was given; to those who could work, a certain quantity of grain was given to grind or of cotton to spin. The only check on these grants was that the visiting members were of different and often of rival classes, so that as the grants were

publicly made, any attempt at imposition would probably have been brought to light. In Bijápur in October 1876 the municipality made a grant of £10 (Rs. 100) to supply grain free to the indigent and infirm poor of the town; in villages money was given. This was supplemented by private monthly subscriptions. In Indi the same arrangement was made in November and a daily allowance of grain was given to those who were unable to work. No Government or municipal grain shops were opened for the sale of grain at cost price. In Bijápur, the largest grain market north of the Krishna, in the latter part of October 1876 the first combination among the local dealers occurred. Grain was plentiful in the town, but the dealers refused to sell except at an enhanced rate. The well-to-do landholders in the neighbouring villages did not care to compete with the local dealers. But, at length, the district officers induced one or two men to make advances of money for the purchase of grain in the neighbouring villages and by selling it at cost price, after deducting carriage, the combination was for a time broken. Indian millet was sold under the supervision of Government officers at eighteen to twenty pounds the rupee, while the local dealers were charging fourteen to fifteen pounds. This was not a Government grain-shop. It was a private arrangement by which under the supervision of Government officers grain was sold for about three weeks at nearly cost price. Before 1876 Bijápur had for years been wholly a grain importing district. When local supplies failed the graindealers were almost paralysed. They had never imported *jvári* and doubted whether it was safe to depart so greatly from the regular course of trade. Grain had always been more or less a drug in the market. If they ordered a large consignment from outside, supplies from the district itself might be thrown into the market and they would suffer loss. Such reasons as these kept the dealers for some time from making any efforts to open communications with the large wholesale exporters in other parts of India. At length when it was rumoured that Government were going to import grain for sale, and they saw that their trade would be ruined, by means of their correspondents at Sholápur, they gave large orders to the grain merchants of Jabalpur and displayed for a short time as much activity as they had before shown apathy. Though part of it came from Belgaum and Belári, the greater quantity of the imported grain came through Sholápur from Jabalpur and the neighbourhood, and was known as Jabalpur *jvári*. When the rains set in, North Bijápur depended on Sholápur and South Bijápur on Belári and Belgaum. The Jabalpur *jvári* was much lighter in colour than the local *jvári* and was much smaller and more liable to injury from damp. It never became a favourite, the people said there was no strength in it, and that half a cake of country *jvári* was better than a whole cake of Jabalpur grain. Still it was always to be had cheaper and there was consequently a large demand. In the early part of 1877 grain was imported solely by dealers and was offered for sale only in the markets of large villages. Later on, when the rain had made the main roads to Sholápur almost impassable and carts took ten or fifteen days to go sixty miles, a brisk trade in headloads

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FAMINE, 1876-77.

Special Measures.

of grain was begun and continued for several months. Respectable men and women some of whom had been on relief works, others employed in their villages, getting a loan of a few rupees would start for Sholápur and buying as much grain as they could carry, would return without delay, dispose of their grain at a fair price and go off again. Moving in gangs of twenty to thirty these petty dealers greatly relieved the stress for grain in outlying villages by bringing a fairly constant supply to the people's doors at a moderate price. As they passed through the district by bye-ways it was for their interest to get rid of their purchases as soon as possible and the inhabitants of many a village which generally depended for their weekly supply on the market town perhaps twenty miles off, were rendered independent by these grain hawkers. By selling the grain at a cheaper rate than the local dealers, they kept down the market rates in the chief villages of the district. Owing to the scarcity of carriage and the heaviness of the roads as soon as the rains set in the supply of grain in South Bijápur became scanty.

Famine Herbs.

When grain was scarce the poorer classes ate as vegetables the leaves of trees shrubs and creepers which are not eaten in ordinary years. Of these the chief were:[1] The tamarind *chinch* (M.) or *hunchi* (K.) Tamarindus indicus, the leaves of which are said to be unwholesome and even when taken in small quantities to have a weakening effect; *Gokharu* (M.) or *velamuchyaka* (K.) Tribulus terrestris a small creeping plant. As a medicine it is said to be aperient and diuretic, and is used in cases of colic, and its juice is said to be strong enough to stupefy a scorpion. Judging from its harsh nature it is difficult of digestion. The leaves which are eaten by cattle are said to be unwholesome and if taken in any large quantity to cause diarrhœa; *Todasi* (K.) Corcharus trilocularis, an annual plant with no marked flower or fruit. In ordinary years though not eaten either by man or by cattle, its juice mixed with whey is a common cure for diarrhœa. The leaves are said to be unwholesome. Medicinally the plant resembles in properties another species Corcharus olitorius the well-known jute which is much eaten as a pot-herb; *Gavat* (M.) or *hitgoni* (K.) Commelyna communis a spreading weed growing abundantly in moist grass lands. Though in ordinary years it is not used by man either as vegetable or a medicine in June and July 1877 it was a common article of food in places where the supply of wild herbs was scanty. This food is sometimes more or less difficult of digestion thus giving rise to diarrhœa and other bowel complaints; *Bhui tarvad* (M.) or *malavari* (K.), probably Indigofera trifoliata, is a small creeping plant with white flowers and fruit. It is very bitter to the taste and in ordinary years it is used as a cattle medicine in cases of colic.

Difficulties.

In the early part of the famine there was a difficulty in bringing relief to skilled craftsmen especially to hand-loom cotton and silk weavers whose sedentary work unfitted them for out-door labour.

[1] A fuller list of Famine Plants and Herbs is given in the Belgaum Statistical Account.

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Difficulties.

They also considered themselves too high caste to work as common labourers. In consequence hand-loom weavers suffered severely. Government made advances to these people and they were thereby enabled to earn a livelihood, Government buying the finished articles at a fair price. Later on when the famine became more intense and charitable relief increased, the great difficulty was to induce people to leave their villages and go to centres of relief. The Kánarese seem to have a high feeling of pride or self-respect. People almost dying from want of food refused to leave their villages preferring to die at home rather than accept of general relief among strangers. In consequence of this it often became necessary to establish small relief kitchens in villages to keep alive those who had steadily refused to let themselves be sent to a relief camp. In many instances, especially when young children were concerned, it was found necessary to force people to go to relief camps.

The purely cultivating classes long held back from any form of relief. They managed to support themselves in their villages by getting loans from their wealthier neighbours. Very few of this class came on relief, but the half-cultivating half-labouring class had little objection to taking employment on roads or other relief works. The Kánarese people are frugal and hardworking. The majority of the better classes who came for relief had some little savings with which to eke out their scanty earnings. When the people had not been allowed from the first to have matters their own way, there was little or no difficulty in managing them, and even in cases when they had been allowed more liberty it only required a little time to bring them into a proper state of discipline. The scarcity of fodder along the lines of transport at one time promised to be a very serious question. Almost all the *karbi* or *jvári* straw had been consumed, and except in the largest towns no fodder was obtainable. Cartmen plying between Bijápur and Sholápur, a distance of sixty miles had to carry their fodder for their bullocks with them the whole way, their carts were not properly laden and their bullocks were only half-fed. To meet this difficulty, in the month of May, Government began to send pressed hay and rice straw and some little relief was experienced. But the hay was coarse Konkan hay yielding little nourishment and it was soon found that the cattle which ate it derived little support from it. Mixed with *karbi* it was of some little service, but the cattle made no improvement on the diet, and, when the roads became heavy with the rains of August, had it not been for the headload traffic, the imports of grain, owing to want of transport, would have been very small. At one time it was proposed to Government to start a transport line of pack-bullocks to carry grain, the dealers paying for carriage as they would on a railway; Government refused to entertain the proposal on the ground that it would prove an interference with trade and might result in a loss of money.

Emigration.

In the early part of the famine, when scarcity of grass was felt, nearly all the best cattle were sent in charge of one or two of the household to the Kánara and Belgaum Sahyádris and also in some instances to the Nizám's country. Most went to the Sahyádris, as

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Emigration.

the accounts of scarcity in the other quarters soon began to come in. The people who emigrated with their cattle belonged as a rule to the better class of husbandmen. About the middle of November when all hope of rain was at an end many of the smaller landholders and well-to-do labourers packed their household goods and with their families started north for the Nizám's country. It was said the harvest was fairly good in the north, and they set off in the hope of finding food and employment. After leaving the district their fortunes were various, some succeeded in getting employment and as the famine increased in intensity moved further north in the direction of Central India. Others gained employment for a short time and then anxiety about their houses and friends induced them to come back much as they had gone, and they had recourse to relief works. Very few improved their condition by going away. They at most supported themselves by a more congenial employment than road-making, while many were never again heard of. The experience of those who went to Kánara was little better. Many of the cattle, accustomed to the dry air of the Deccan, died from exposure on the Sahyádris while their masters' condition was not much better. Contracting fever and other diseases in the damp air of the hills, many died there, and others returned to their villages, either to die or be crippled for life. On the whole the results of the emigration were not good, the distress perhaps was too widespread and the emigrants never passed beyond the famine-stricken area.

Famine Census.

A special census, taken on the 19th May 1877 when famine pressure was general and severe, showed that of 72,451 workers, 63,821 on public and 8630 on civil works, 54,755 belonged to the sub-divisions where the works were carried on; 16,471 belonged to different sub-divisions of the same district; 733 were from other districts; and 492 were from neighbouring states. Of the whole number 3320 were manufacturers or craftsmen, 23,688 were holders or under-holders of land, and 45,443 were labourers.

Cost.

The total cost of the famine was estimated at £258,375 14*s.* (Rs. 25,83,757), of which £230,872 16*s.* (Rs. 23,08,728) were spent on public and civil works, and £27,502 18*s.* (Rs. 2,75,029) on charitable relief.

Effects.

Compared with 1872 the 1881 census returns show a fall of 177,780 in population. The addition of the normal yearly increase of nearly one per cent during the remaining seven years gives 234,841 as the loss of population caused by death and emigration in 1876 and 1877. The Collector's stock returns show a fall in the number of cattle from 741,291 in 1875-76 to 437,716 in 1878-79, a loss of 303,575 head. The tillage area fell from 2,084,721 acres in 1875-76 to 2,078,796 acres in 1878-79. The outstanding balances on account of the current year were £1 8*s.* (Rs. 14) for 1875-76, £74,838 (Rs. 7,48,380) for 1876-77, £20,396 (Rs. 2,03,960) for 1877-78, and £24,842 (Rs. 2,48,420) for 1878-79.

Rat Plague, 1879.

In 1879 the district suffered from a plague of rats which destroyed about one-half of the crops by eating off the millet heads and the cotton pods and biting the wheat stalks close to the ground. The ravages of

the rats continued throughout the year, and threatened the general destruction of the early crops. Active measures were taken to reduce their number. No fewer than 4,130,209 were destroyed at a cost to Government of £4043 (Rs. 40,430). Of these more than half a million were killed and rewards of 2*s.* (Re. 1) the hundred were claimed in a single week. Distress prevailed during the greater part of the year. As the poorer classes had not recovered from the effect of the 1876-77 famine, Government undertook relief measures both for charity and for employment. In 1878-79 the sum advanced to husbandmen for seed or stock was £1084 (Rs. 10,840) against £3888 (Rs. 38,880) advanced in 1877-78.