Gali Rogam or maggots in the hoof.—The native treatment is to mix camphor, green tobacco and soot, and apply the mixture to the feet.

Diseases of Sheep.

Bubba Rogam in sheep is an eruption over the whole of the body which makes its appearance in the rains. It is probably due to feeding on the coarse rank grass which grows soon after the first rains.

Domma Rogam is a disease of the hot weather in which the animal is affected with puffiness of the belly, a loose watery purging and loss of appetite. Three lines are fired across the nose, but no medicine is given.

Kitkomba Rogam is a very fatal disease which appears in the rains and prevails extensively. The symptoms are swelling of the head and face, severe purging and trembling of the head and body. When it becomes epidemic, one-half of the flock at least is attacked, and the mortality is as much as 90 per cent.

The simple agricultural instruments in use have already been mentioned. The old country carts are of singular construction, but are fast disappearing and are now chiefly used by Wudders in carting stone. The wheels are from one and a half to two feet in diameter, and are made either of flat circular pieces of wood or of stone slabs. The axles revolve with the wheels, and the body of the cart is well raised above them by two straight pieces of wood on each side, in which the wheels run. The present country cart is made more solidly and has good wheels with spokes, &c., and is capable of carrying from 5 to 6 cwt.

CHAPTER II.

TRADES AND MANUFACTURES.

Cotton Goods—Preparation of the Cotton, Tape, Carpets, Rope.—Woollen Goods—Cumblies, Carpets, Felt—Stamping of Chintzes—Dyes—Oils—Sugar and Jaggery—Paper—Tanning—Glass-bangles—Ropes and Fibres—Iron foundries—Pottery.

1. **Cotton.**—Of the agricultural products of the district *cotton* is the most important. It is the indigenous cotton (none of the foreign varieties having been introduced with success), and it is exported

in a raw state to a considerable extent both to Madras and Bombay. The staple has been pronounced equal to the best 'western' and were more care taken in preparing the cotton for the market, it would command a high price.

The manufacture of cotton goods furnishes employment to a considerable portion of the population of some parts of the district. The first process the cotton has to undergo is to clean it from the seed. For this the common 'charkhá', which is too well known to need description is commonly used, but there is a much more simple and equally efficient process. This is called cleaning by Teckla. The apparatus required is very simple; a rod of iron from 15 to 18 inches in length, and ¾ of an inch in diameter in the centre but tapering to both extremities, a piece of granite tolerably smooth on one face, two pieces of wood of an oval shape about six inches long, and a three-legged stool. The operator, usually a woman, seats herself on the stool, places the piece of granite with its smooth face upwards on the ground before her, lays the iron rod across it, and then with the pieces of wood interposed to protect her feet, she places her feet on the ends of the rod, and thus rolls it rapidly backwards and forwards. With her left hand she feeds the bar with cotton from the front, and the cleaned cotton is withdrawn from behind by the right hand, while the seeds are pushed over the edge of the stone.

The next process is to clean and loosen the cotton. A strong bow, some six feet in length is suspended from the roof of the house, so that the bow string, (the bow being held sideways with the string somewhat depressed) is within a few inches of the ground. The bow is held in the right hand, the cotton placed on the ground under it, and the string is then struck with a heavy wooden instrument shaped like a dumb-bell, while the bow is at the same time pulled down, so as to bring the string in contact with the cotton. The dirt and dust falls through a grating on which the cotton is spread. After being cleaned and loosened by the last process the cotton is made up into small rolls, by rolling a small quantity of the cleaned cotton round a small bamboo which is then withdrawn, and the rolls are handed over to the spinner.

The process of spinning is conducted in the following manner. A light spindle is made to revolve in a small frame by means of a wheel and band. While the wheel is driven by the right hand of the spinner the small roll of cotton is held in the left hand and is gradually drawn out as the thread is twisted. When the arm is at

the full stretch the wheel is reversed, so as to set free the twisted thread, which is then wound on to the back of the spindle.

The thread is then made up into hanks for weaving. The loom used is in all essential points exactly similar to the common hand-loom of England, except that the shuttle is passed by hand instead of by a mechanical contrivance.

In some places the cloths thus woven are made of a mixture of cotton and silk, and some entirely of silk. The silk is usually imported in a prepared state from Mysore and Coimbatore, though at Hospett, Chitwadi and a few other villages on the Túngabadra river, silk-worms are reared, and a small quantity of silk prepared.

Tape.—Of the other manufactures of cotton, tape is a very extensive one. A small square frame about a foot high (formed by two uprights with an upper and lower cross bar), has a number of threads about four inches long and terminating in a loop fastened to the lower bar. Through these loops every alternate thread of the warp is passed and then carried over the top of the frame and on to a peg beyond. The other threads of the warp pass through the frame and in like manner are carried on to the same peg. The work is held in the left hand and alternately raised and depressed, so as to open a passage for the weft. The weft is made up as a ball and is passsd through with the left hand as the threads are changed, while the weft is driven home by a piece of wood shaped like a broad-bladed knife which is held in the right hand.

Cotton Carpets are made of a large size for houses and tents, and of a smaller size for native troops. Adoni is the place where these carpets are chiefly made, and they are exported in large quantities. They are generally made on the common loom.

Rope of a superior quality is made from cotton thread.

Woollen Goods.—1. *Cumblies* are the great article of export and the rugs made in the Kúdlighi taluq are in great demand and are sent to all parts of the country. They are manufactured of various qualities, from the coarse elastic cumbly used in the packing of raw cotton, price about six Annas, to a fine kind of blanket, price Rupees 6 to 8. In former times a much finer fabric was manufactured from the wool of the lamb when six months old, and cumblies of this kind sold for Rupees 50 or Rupees 60. These are no longer made. After shearing the wool is cleaned and picked with the greatest care. It then undergoes a process similar to that for cleaning and loosening cotton, except that the bow is much slighter and

is twanged with the finger. The thread is prepared in the same way on a small spindle, and the weaving is conducted on a simple loom in the open air.

2. *Carpets.*—These are strong and durable, and can be made to any size or pattern, but they are not equal to the carpets of Ellore and Mysore. Usually the weft only is wool, the warp being strong cotton thread. The workmen do not keep a pattern before them, but when any new pattern is given to them they study it till they are master of all its details, and then work it from memory. Any number of men for whom there is room may be employed on the same carpet.

3. *Numdah or felt.*—This is made by cleaning and loosening the wool, and spreading it out evenly on a cumbly or blanket. It is then moistened with gum and rolled backwards and forwards till the wool is properly interlaced.

Chintz-stamping.—The stamping of chintz is an art which has long been practised in India, and was in fact introduced from this country into Europe. The manufactures of Great Britain, from the perfection attained by the use of machinery have to a very great extent superseded those of India, especially in the coast districts. In inland places the art is still carried on, and the village of Pamadi in the Gooty taluq has for some time been famous for its printed calicos which are exported to a considerable extent. The printing is done by wooden blocks on which the pattern is cut out. The blocks are of teak and are made in the village by families whose sole trade it is to supply them. In Bellary and other towns chintz is stamped, but all the blocks are made at Pamadi.

Dyes.—The dyes commonly used are not numerous.

For *blue*, Indigo is the substance used in Bellary as well as all over India. About 6,000 acres per annum are on an average planted with this crop, chiefly in Tádpatri and in the western taluqs, but a great deal is imported from Nellore, Cuddapah and Madras. The process of manufacture is too well known to require a detailed description.

Red.—Two or three descriptions of red dye are used.

1. For wool that from the lac insect is most preferred. This insect constructs its cells, which resemble those of a honey-comb, round the small branches of various trees. At maturity it is collected. The comb is broken up and thrown into water for 24 hours.

The liquor is then put into a vessel with a quantity of tamarind equal in weight to the thread to be dyed, a little alum, and a little turmeric. This is boiled for some time, and while warm the cloth or thread to be dyed is introduced. The lac when removed from the water and dried forms the seed-lac of commerce. 2. Another red dye is formed from the chips of the wood of the "Kamblú tree" (careya arborea). This is not a fast colour and is used chiefly for common and cheap cotton cloths. 3. A third red and the one principally used for cotton and more especially for the stamping of chintz, is obtained from the roots of the chirunji shrub (Buchananiá latifolia) which is for this purpose largely imported from Mysore and Bombay. The cloth to be printed is first dyed yellow by being soaked in a solution of the pounded seeds of a certain jungle tree (Hulla.) Alum water mixed with gum is then applied to the printing blocks and with these the pattern is stamped on the cloth. A solution is then prepared of the chirunji wood, and a grass found in the bed of the Túngabadra, called 'Hubba,' and in this the cloth is boiled. When taken out the parts of which the pattern was stamped with alum water appear red, while the yellow dye has been discharged from the rest of the cloth. This red is a fast colour.

Green is produced by putting an article dyed blue with indigo into a preparation of turmeric and lime juice with a little alum, but this is not a standing colour. A fast green is produced by putting the indigo-dyed thread or cloth into water with the flowers of the moduga-plant (Butea frondosa). This plant though found in the district is usually imported from Mysore. The cloth or thread is allowed to soak for three days. It is then taken out and dried and then boiled in a solution of alum and turmeric. White thread treated in the same way becomes a bright yellow, and if afterwards soaked in a solution of carbonate of soda, it becomes a dark orange.

Black.—A black dye is prepared by putting old pieces of iron into water containing ragi flour and a small quantity of jaggery. A better and faster colour is obtained by adding a small quantity of the powder of the haldá nut a kind of gall-nut.

Pink is obtained from the kúsam plant (carthamus tinctorius) or bastard saffron. This plant is extensively cultivated in the district, the seeds yielding an oil, and the flower a dye. The flower is gathered and rubbed down into a powder and in this state sold. Before it can be used for dyeing, it is put in a cloth and washed to

clear it from a yellow colouring matter. It is then boiled and yields the pink dyeing liquid.

Oils.—Various seeds are cultivated for the production of oils. Of these the more important are the til or gingelly (sesamum indicum), linseed (linum usitatissumum); castor-oil (ricinus communis); kúsam (carthamus tinctorius). Oils are also expressed from the seeds of the ganuga tree (galedupa indica), the nim (melia azedarach) and the ippé tree (bassia latifolia).

All except castor-oil are expressed oils, and in their preparation the common oil-mill is used. This is a sort of large wooden mortar, usually formed out of the heart of a tamarind tree and firmly imbedded in the ground. A wooden cylinder shod with iron fits roughly into the cavity. A cross beam is lashed to this in such a way that one end is close to the ground, and to this a pair of bullocks or buffaloes blind-fold are fastened. By an arrangement of pullies the pressure of the cylinder can be increased at pleasure. As the bullocks go round the trough the seeds are crushed by the action of the cylinder, so that the expressed oil falls to the bottom while the residuum as oil-cake adheres to the side of the mortar. Water and two or three seers of jaggery are usually added for the purpose of clarifying the oil.

Castor-oil was named as an exception to the manner of obtaining the oil by expression. In this case the seed is first roasted on flat iron pans and then ground on a stone. It is still further pounded in a wooden trough with a pestle shod with iron, and it is then boiled in water when the oil rises to the top and is skimmed off. In some cases the seed is boiled instead of being roasted.

Cocoanut oil is also made in the district. The oil is expressed in the common mill and is afterwards refined by the addition of a little saltpetre.

The cocoanut, castor-oil, kúsam and ganuja are the usual burning oils, and gingelly oil is often used for this purpose, though its principal use is for cooking, and it and the cocoanut are also used as hair-oils. The oil of the ippé tree is used both for burning and for culinary purposes; that of the nim is purely medicinal.

Sugar-cane and Jaggery.—The cane is chiefly grown in the taluqs of Hospett and Bellary, the water required being supplied by the irrigation channels taken off from the Túngabadra river. There are two varieties, the red and the white cane. The former is a thinner and more stunted plant than the latter, which was intro-

duced into the district many years ago, and has now almost superseded the red cane. Both are propagated by cuttings and require constant irrigation. The cane-mill used in this district is formed of two smooth cylindrical upright rollers, having at the end of each an endless screw of four or five grooves. These rollers are mounted in a strong wooden frame in close contact with each other, and the head of one of them is prolonged beyond the upper frame. To this a long lever is fastened and motion is given to the mill by a pair of bullocks fastened to this lever. The frame enclosing the rollers is sunk to a depth of two-thirds of its height in an oblong pit. The lower part of the frame has channels cut in it, which run round the bottom of the rollers and unite in a main channel leading to a sunken tub or large chatty. As the mill revolves the cane is put between the rollers, which crush it, and the expressed juice flows into the tub. These mills cost from Rs. 150 to Rs. 200 and last about three years. Portable iron cane-crushing mills have from time to time been exhibited, but the ryots do not seem to appreciate them.

The boiling shed is close to the mill. This contains one or two large iron chaldrons in which the cane-juice is boiled down. When sufficiently concentrated, a small quantity of quick-lime is added to clarify it, and the syrup is then poured out on mats made of date leaves. It solidifies into a pretty hard cake, and it is in this form that most of the district sugar is sold. If the sugar is required for the refiners the juice is not so much concentrated during the boiling process, and it is poured out into pots in which it cools and crystallizes. These pots are then inverted upon a bamboo framework over a tank or receiver, and the molasses allowed to drain off. The sugar is then transferred to baskets and covered with the green leaves of a certain water plant. The slow passage of the moisture from these leaves carries down the remainder of the molasses and colouring matter, and a layer of white pure sugar is left on the top. The process is repeated till the whole mass has been purified.

Paper.—Coarse paper is made in the district from old gunny, but the manufacture is not an important one, and the process is in all essential points the same as is followed at home in the manufacture of hand-made paper.

Tanning.—A considerable quantity of leather is manufactured, principally for home consumption, but the process is carried on far too hastily to permit the leather to be of good quality. The tanning of a bullock or buffalo hide occupies only twenty days. It is first

placed for eight days in a pit with quick-lime to remove the hair, &c. After being washed and scraped it is placed in a strong solution of the bark of the Tangadi plant (cassia auriculata). After a further period of eight days the skin is taken out and sewn up into a bag, which is filled with a solution of Tangadi bark. After four days the skin is considered ready for the market.

Raw hides of various animals are exported, but those most in demand are goat-skins which are sent to Madras.

Glass Bangles.—These are manufactured in several villages between Bellary and Gooty. The glass is made from a mixture of carbonate of soda, sand and a sort of flint, the colouring matter being copper or tin. The materials are mixed and put in large crucibles. These are introduced into a large furnace and the fire kept up for fifteen days, when the process is completed and each crucible is found to contain a mass of coarse glass. This is pounded fine and remelted in small furnaces, and the bangles made by withdrawing a small quantity of the melted glass on the point of an iron rod, and passing it round a mould of clay of the required size and form.

Ropes.—Various plants are cultivated in the district which yield fibrous substances from which rope and coarse sacking are manufactured. Of these the best known is the Hibiscus canabinus (Ambádá, Hind.) or as it is called in the bazaar sour greens. The stalks are sunk under water until fermentation takes place and putrefaction commences. They are then taken out, dried, rubbed and beaten until the fibre is disengaged from the woody portion of the stalk. From this fibre a cheap rope extensively used is manufactured, and the fibre is largely exported in a raw state. Sunna or hemp (Crotolaria juncea) is grown in the southern and western parts of the district, and from it a coarse sacking called "gunny" is manufactured as also twine and rope. The fibre of the aloe (Aloe vulgaris) is also used occasionally for the manufacture of rope, but not to any great extent. A common rope is made from the inner bark of the Veka (Bauhmia vahlii) which is much used in out-door work and about the roofs of thatched houses. The ropes for drawing water from wells are usually made from the stalk of the date leaf.

Iron Foundries.—The iron ore is found in the Sandúr hills. The principal foundries are at Camlapúr and Hossúr in the taluq of Hospett, where the huge chaldrons required for boiling the sugar-cane juice are made. There and in other places in the western taluq

the ore is mined with a pick, but in Raidrúg and Dharmaveram it is procured by washing the iron sand found in some of the nullahs. The sand is washed away and the particles of iron sink to the bottom of the chatty. The quantity of iron manufactured annually is unknown; twenty years ago it was estimated to be 51,000 maunds.

The melting furnace is about four feet high, one and a half feet in diameter at the bottom, and nine inches at the top. The bottom of the furnace is sunk six inches below the ground. The first one and a half feet from the ground is solidly built, and the top of this portion forms the hearth. Just above this in the side of the furnace, a hole is left for the nozzle of the bellows, which is fixed in with clay. The bellows in use are made of an entire bullock's hide, and in working them they are compressed both by the chest and arms. A continual blast is secured by the use of double bellows, which work alternately. The furnace is then filled from above with charcoal till it is about three-quarters full. About 6 lbs. of the ore broken into pieces not larger than a bean are then introduced and covered with charcoal. As the furnace burns down, ore and charcoal are put in alternately. In about two hours the melting is completed, and by that time about 36 lbs. of ore will have been consumed. The iron is then drawn out at the bottom of the furnace and four men beat the red hot mass with wooden clubs to get rid of the 'slag.' It is then cut into pieces with axes used as chisels and allowed to cool.

Pottery.—The earth used is called Banka-mannu and when brought from the fields is mixed with sand in the proportion of 3 to 1. The kneading is done both with feet and hands and is a very fatiguing and tiring task. To form the potters' wheel a circular piece of wood about eight inches in diameter is taken, and a flat stone with a hole in the centre is let into it. This is the nave of the wheel. Six thin sticks are inserted as spokes, and hoops are tied on to the extremities. This circumference is loaded with clay to make it heavy, a stout peg is partly buried in the ground, and on the exposed portion of this the wheel revolves, the peg fitting into the hollow of the stone let into the nave. A sufficient amount of moistened clay is then placed on the nave, and a rotatory motion given to the wheel by means of a long stick inserted into a hole made for the purpose in the circumference of the wheel. The clay as it revolves is constantly moistened, and by continual manipulation the requisite shape and finish is given. The newly made vessel is then removed and with others left to "set" in an inner room of the house. After two days it is taken

out and gently beaten all over with a small wooden bat, to smooth off all roughnesses. When a sufficient number of pots and other vessels is ready, a kiln is prepared for baking them. The pots are piled together as closely as possible, and the interstices filled with brushwood, straw, the dried sweepings of the town and other rubbish. The whole is then covered in with earth, so as to look like a large beehive. The kiln is set on fire from the bottom in the evening, and is opened early next morning, and the pots, &c., taken out.

Tiles are made in this way, being prepared first in the shape of a hollow cylinder which is afterwards, and while the clay is still soft, divided by a sharp piece of iron.

There are no other manufactures of importance. Gooty was once famous for candles, but these have been superseded by those of English make. At Harpanhalli a few families make a living by wood-carving and the manufacture of toys.

CHAPTER III.

CIVIL DISPENSARIES.

Gooty, Adoni, Hospett, Anantapúr, Bellary.

Civil Dispensaries.—Civil Dispensaries have been opened at Gooty, Hospett, Adoni, Anantapúr and Bellary. The first four are looked after by a Dresser or Apothecary. The dispensary at Bellary is under the supervision of the Garrison Surgeon.

Gooty.—The dispensary is at present established in a verandah of the Monro choultry, a most unsuitable place in every way. The sanction of Government has been obtained for erecting a new building; the funds will be provided from savings from the endowment of the choultry. These savings will be made by discontinuing the usual distribution of grain to inmates of the choultry. (Vide G. O., Revenue, 6th June 1870, No. 830.) The dispensary, as at present constituted, will accommodate four in-patients and is generally full. Thirty is the average daily number of out-patients.

About Rupees 25 is raised by subscription each month for the support of the institution.

Adoni.—The building used as a dispensary in this the second largest town in the district is a small native house in the heart of