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REPORT
ON
INLAND AND SEA FISHERIES
IN THE
THONGWA, MYAUNGMYA, AND BASSEIN DISTRICTS,
AND
REPORT ON THE TURTLE-BANKS
OF THE
IRRAWADDY DIVISION.



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REPORT ON THE TURTLE-BANKS OF THE IRRAWADDY DIVISION.

1. The turtle-banks of the Irrawaddy division are situated on the coast between the mouth of the To or China Bakir river and the Sandoway district. Practically the whole coast line is included in some turtle-bank, the only parts excluded being the coast line between the Thandeik and Payapôn rivers and between the Eya or Irrawaddy river and the Amatgyi creek. In addition moreover to the actual coast, nearly the whole of the littoral line of the Pyinkayaing circle is included, as loggerheads move up the Thetkèthaung and Bassein rivers, both abnormally wide at their mouths, in the laying months September to December. The coast may conveniently be divided into two parts at the Thetkèthaung river. That to the east of this line being, as Theobald describes it, "a littoral tract of country * * a delta wherein debouches through a "thousand creeks a mighty river beneath a tropical sun." Later the same author after asserting that the Irrawaddy is an excavating and not a depositing river as the Ganges, continues: "The Irrawaddy ploughs its way to the sea unhesitatingly and "undeviatingly (whence its narrow channel on which I have so much dealt) through "plains of homogenous alluvium mainly as I hold deposited under estuary conditions * * whilst the Ganges hurries to the sea through a delta composed of "its own proper fluvial deposits. The alluvial matter, which in the event of subsidence of the delta would become effused over the country building it up at top "in a ratio, approximating to the rate of subsidence as we see has taken place in "Bengal, is in Pegu swept out to sea and being spread far and wide in the troublesome gulf of Martaban * * ." It follows therefore that the Bay of Bengal at the various mouths of the Irrawaddy consists of a series of sand and mud banks, composed of "beds ranging from a fine silver sand to a fat unctuous loam." Here and there, *e.g.*, Thaungkadun, Kaingthaung, Hngetpyawkyun, these banks become islands and in course of years, especially where the islands are situated close to the mainland, *e.g.*, Thaungkadun and Labaing, the channels between the mainland and the islands gradually silt and the islands cease to be such except perhaps at high water. Of the two islands east of the Thetkèthaung river, Hngetpyaw and Kaingthaung are about a mile and a half from the mainland, are covered with dense estuary jungle, and must have been in existence for many years. Quite recently another island has appeared due south of Kaingthaung and, unless its position shifts or it gets washed away, promises to prove of value; it has received the name of Kadôngale. These three islands, Kaingthaung, Hngetpyaw, and Kadôngale, form the Kaingthaung group. Thaungkadun at the mouth of the Dalla river is now only an island at high water, the bed of the back-water having extensively silted up in recent years. Labaing, a small island further west, has also suffered the same fate. The Amatgale bank is called an island, but for all practical purposes is part of the mainland. The margins of these islands and of the mainland are alternated by brush-wood, tree jungle, and mangrove jungle growing on the "fat unctuous loam" and by bays of "a fine silver sand." It is on these sandbanks that the turtle and tortoises lay.

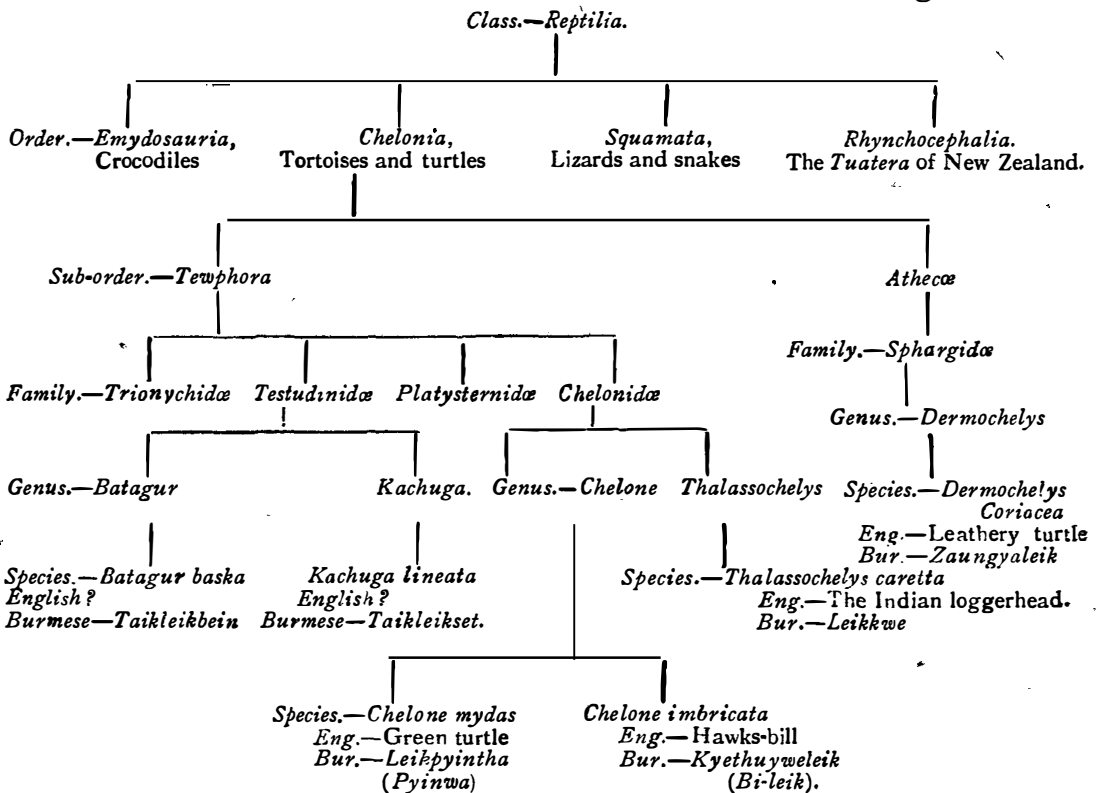
To the west of the Thetkèthaung river the country is quite different. Estuary islands, lowlying land, and estuary jungle make way for rocky hills covered with timber-tree jungle, and varying in height from, say, 100 feet at Purian and Pagoda Points to 500 to 800 feet a few (150) miles further north. Into the sea on the western coast fall many small creeks or more properly mountain streams, quiet dry, except in the rains, but then torrents. The mouths of most of them are, however, subject to tidal influence, but nearly all are fordable at low water. The amount of silt brought down is infinitesimal and may be wholly disregarded. The spurs of the hills run down to the sea, the whole coast line being strewn with rocks far out to sea. Between the spurs are bays, also of "a fine silver sand," on which

the surf beats continuously day and night throughout the year. To these sandy bays the loggerheads resort, though in less and less numbers as one travels north. Just off the coast here and there are small islands, most of which have their sandy bays in which the green turtle lays, but the number of islands and of turtle laying are small.

From Pagoda Point as far as the Sandoway district there is not, so far as I am aware, a single sandy shoal or mud-bank, though the coast is strewn, as I have remarked, with rocks far out to sea. The difference between the two littorals is that whereas one, *i.e.*, that to the east of the Thetkèthaung, is fringed with sand and mud banks, the latter is an essentially rocky coast, in which the bays of sands are approached by channels passing between rocks and over beds of rocks. Just off the mouth of the Bassein river and about $5\frac{1}{2}$ miles from the mainland is Diamond Island, known to the Burmans as Thamihla or Meinmahla *k'yun*, the island where, according to tradition* (a tradition common to many countries and many peoples), certain beautiful princesses vowed to celibacy but betrothed to royal bridegrooms sought safety and peace. The island is diamond in shape (hence its name), stands well out of the sea, and is surrounded completely, I believe, by a rocky reef some 300 yards from the shore. It is 1,400 yards long, north to south, 700 yards wide, and about 3 miles round. Of the 3 miles about 2 are strewn with rocks and the rest, say, 1,500 yards, is a series of sandbanks. This island is the most valuable turtle-bank possessed by Government and as a true turtle-bank (in opposition to turtle *cum* tortoise banks) yields a larger revenue than all the rest put together. At present the rent is Rs. 16,100 per annum. Further up the mouth of the Bassein river is Hainggyi, a rocky island, on the southern extremity of which is a sandbank, on which a few loggerheads lay.

Turtle and tortoises.

2. The six species of turtle and tortoises laying on these banks are shown in the following tree:—



As considerable confusion exists about the identity of the six species, and in order that there should be no possible doubt on the subject, I sent adult specimens (alive) of the green turtle and *Batagur baska* and a young loggerhead in spirits to the Calcutta Museum. There they received the names given to them above. About the hawks-bill turtle there can be no possibility of doubt, as the species

* Mr. A. St. John in a recent *Asiatic Quarterly* gives another derivation for the word Meinmahla. If his suggestion is correct, then obviously there is a connection between the word Thamihla and Meinmahla.

is the only turtle from which tortoise shell of any value is taken and is known by the Burmans as *bi-leik* in consequence. About the leathery turtle also there can be no possibility of doubt owing to its extreme rarity, immense size, and peculiar shell, which is "covered with a leathery skin of a blackish neutral colour above, covered with white spots like splashes of white-wash." Its name, in Burmese *zaungya*, so called because the shell is like the fruit of that tree *Averrhoa carambola*, points to the identification being correct. On the Arakan coast the species is sometimes called *leik-kaba* which may be freely translated longlived or immortal, as it is popularly supposed to live to an immense age. A carapace of what I believe is *Kachuga lineata* was sent to Calcutta and a suggestion made as to its identification, but the Deputy Superintendent informed me that "it was not in his power to add anything to my suggested identifications as the specimens I sent were imperfect and the museum specimens not convenient for comparison." Attempts were then made to get live specimens, but the only one obtained died soon after capture. I do not think that for practical purposes it is very important whether the species is *Kachuga lineata* or any other of the same genus *Kachuga* to which I think there can be no doubt it belongs.

The green turtle is named in Theobald, page 344, *pyinwun*. *Economic Products* follows this and adds *kyæ*—Anglice, large?. Mr. Stevenson infers (page 1008 of his dictionary) that there is only one marine turtle, called at line 5 *pyintha* and lower down *pyinwun* and adds that the Burmese do not like its flesh because it has a "rank smell." The turtle, whose flesh has a rank smell and is inedible is the loggerhead—(Burmese, *Leikkwe*). The green turtle, the *leikpyintha*, is edible and much prized. In the Thônghwa district the *leikpyintha* is called *pyinmum*; further west the name changes to *pyinwa* and at the mouth of the Bassein river the Talains call the reptile *payanwa*, the Burmans *pyinwa*. Evidently *pyinwun* and *pyinwa* and possibly also *pyintha* are all corruptions of the Talain word *payanwa*. Notwithstanding the authorities against the identification now made the latter must, I think, be considered correct. In other parts of Burma, *i.e.*, Tavoy and Mergui, other names are no doubt given to the turtles; of those, however, I know nothing. The estuary tortoises *Batagur baska* and *Kachuga lineata* are known to Burmans as *taikleik*, the former being called *taikleikbein* and the latter *taikleikset*. In the Danubyu township they are called *bawawa*.

Another species of tortoise very nearly exactly like *Batagur baska* is called by Burmans *taikleikbeinyaung set yaung* or in another place *set yè*. Some say that this species is the same as *Batagur baska*; others that it is different. I only saw one shell and sent it to Calcutta, but the Museum authorities did not identify it. The only visible difference I could detect was that, whereas the epidermal horny shields of the carapace of *Batagur baska* are apparently all in one piece the carapace of the other kind has slight marks indicating where the shields would be if they existed. It is more than probable that the *taikleik beinyaung set yaung* is merely a *Batagur baska* at a different age.

That the reptile laying on the estuary islands at the mouths of the Irrawaddy is the tortoise I have never seen stated anywhere: indeed the proceedings of the banks along the coast would lead one to suppose that turtle and turtle alone laid on them. Theobald makes no mention of the circumstance, though he does suggest that the tortoise lays only in riverine islands in the Irrawaddy. Dr. Day, whose reports cannot unfortunately be found, did not, so far as the notes on the report which I have read go, make mention of it. Further, some years ago, a Commissioner of Irrawaddy, while himself referring to the turtle-banks of Thônghwa, ridiculed a statement of the Deputy Commissioner of Henzada that there was a turtle-bank in his, an inland, district. The tortoises formerly laying on the bank in the Zalun township of the Henzada district; the bank itself is now a thing of the past, a great extension of *kaing* cultivation and a multiplication of steamers having driven the creatures to the coast; and the tortoises now laying on the estuary islands off the coast are undoubtedly the same species. We may therefore with perfect justice call Thaunggadum and the Kaingthaung group, the banks on which the tortoises lay, tortoise *cum* turtle-banks, the former more especially as it depends almost entirely on the tortoise for its supply of eggs.

There are then six species that lay on the turtle-banks—four marine turtles—

- | | | |
|--------------------------------------|--|--------------------------------------|
| (1) Green turtle (<i>pyintha</i>), | \| | (3) Hawks-bill (<i>kyettuywe</i>), |
| (2) Loggerhead (<i>kwe</i>), | | (4) Leathery (<i>saungya</i>), |
- and two estuary tortoises—
- | | | |
|--------------------------|--|--------------------------|
| (5) <i>Taikleibein</i>. | \| | (6) <i>Taikleikset</i> . |
|--------------------------|--|--------------------------|

For Nos. 5 and 6 I know no English equivalent. Theobald, who classes them in a somewhat different way to the *Flora of India* series calls both *Batagurs*. Of the four species of marine turtles two, the hawks-bill and the leathery turtle, are very scarce, more particularly the latter, and from an economic point of view may be left out of question altogether. Of the two remaining, the green and the loggerhead, I should say that they are fairly divided in numbers, though in this view Theobald and Boulenger (*Flora of India Reptiles*) do not agree. The former says that the loggerhead "seems the most numerous," the latter that the loggerhead is not rare in the Bay of Bengal, whereas the green turtle is "rather rare." Neither of these opinions are of a very decided character, so I will give the figures and evidence on which I base my assertion.

The annual take of the eggs of the loggerhead on the banks of the Irrawaddy division is about a million and a half, whereas the annual take of the eggs of the green turtle on Diamond Island is generally 1,600,000 and frequently more, and in addition the turtle lays a few thousand eggs on the islands of the west coast. I am aware of the danger of assuming that because the number of eggs any two species lay is approximately the same therefore the actual numbers of the species are the same. I have, however, made enquiries from officers in the Mercantile Marine, from a light-house keeper, and from many villagers, and all seem agreed that the green turtle is common in the Bay of Bengal. The crews of ships becalmed in the bay frequently meet and spear the green turtle asleep on the surface. I have myself been on spearing expeditions in the Nicobar Islands, where they are extensively killed. The green turtle used to be captured in the Andamans and sent up to Calcutta in fairly large numbers some years ago, and possibly is so still. The light-house keeper above referred to, Mr. F. Stanley, informs me that large numbers of the green turtle lay on Oyster Island and on the Cocos. The present lessee of Diamond Island once sent an expedition to Pre-paris Island, which brought back large quantities of the eggs of the green turtle and reported that many tens of thousands remained. The loggerhead is rarely mentioned by officers of the Mercantile Marine to whom I have spoken, and very rarely seen by villagers or by others. I do not remember hearing of the loggerhead in the Andamans or Nicobars, though no doubt the species laid in the neighbourhood of both islands.

On the two estuary tortoises the *bein* is in far larger numbers, 4 to 1 and 5 to 1 is usually stated to be the proportion; of two heads of 500 to 100 I saw, hardly a single *set* could be distinguished, and out of 19 footprints on Kaing-thaung all were those of the *bein*. Notwithstanding that I offered a liberal reward, I was unable to get a *set*. A *taikleik bein* was easily captured and given to me. It is said to be impossible to distinguish the eggs of the two species, notwithstanding that the *bein* is much larger than the *set*.

Assuming that the annual take of green turtles' eggs is 2,000,000, loggerheads 1,500,000, and estuary tortoises 70,000, and that the green and loggerhead turtle lay 400 eggs in a year and the estuary tortoise 50 eggs, then the number of turtle and tortoises laying annually would be—

Green	5,000	} assuming that the <i>bein</i> is five times as numerous as the <i>set</i> .
Loggerhead	...	...	3,750
<i>Bein</i>	...	...	1,75
<i>Set</i>	...	...	225

The number of turtles seems and probably is ridiculously small for an extensive littoral line and wide ocean. My belief is, however, that Burma merely gets the surplus turtle population of the Andamans. There of course the reptile is almost untouched and the numbers would consequently depend on the quantity of food in the neighbourhood of the islands. If this is correct, then the capture

every year of one-half the number of turtles or even more which visit Burma would make no appreciable difference to the population of the Bay of Bengal, nor consequently to the number laying on the Burma coast.

With regard to the tortoise I shall be able to show that the number has decreased largely and that consequently the estuaries of the province could support many more of the two species than now exist.

3. With the exception of Diamond Island and Amatgale, the former worked by a Bassein and the latter by a Myaungmya man, all the banks along the coast were in the year 1897-98 worked by local men. To was divided into six smaller banks and sold to the villagers in the vicinity. Three banks on the mainland to the east of Thaungkadun island were sold locally. Thaungkadun itself and Kaingthaung are always worked by men living at Pyindayè or the village across the river, Kadônkani. Eya Teikwet is not a turtle-bank. Pyinsalu, Pyinkayaing, Nganchaung, Ngayotkaung, Sinma, and Bawmi are always divided into many small banks, which are sublet and sold locally. Kabaungmaw and Hainggyi are not split, but are invariably worked by local men. Amatgale is generally worked by local men. At the last auction held at Wakèma, 70 or 80 miles away from the bank, a Myaungmya trader bought it. The Diamond island bank has been bought by Bassein Zerbadis every year bar one, when a well-known Chinaman became the lessee. The purchasers rarely if ever go near the island but content themselves with giving security, applying for and generally getting remissions of revenue, hiring labour and taking the eggs as they come up from the island. To the workers of all the banks, with the exception of part of Thaungkadun, Kaingthaung, Amatgale, Pyinsalu, and Diamond island, collecting turtle eggs is a by-product. They are men living in the vicinity who saunter out in the early morning and collect what eggs the loggerheads and the thieves have left behind, selling them in the vicinity and mostly for consumption in the vicinity. The other banks named, bar Diamond island, are worked by men who make a business of the turtle-banks, sacrificing only their ordinary occupation, fishing, in favour of the banks. From these banks eggs are distributed all over the country after supplying the local requirements. Diamond island is, as I have remarked, worked by deputy, the employés being Arakanese. On the banks to the east of the Bassein river the workers are all Burmans. I only met one native of India cooly employed on the banks, all the rest of the ordinary labourers being Burmans and Arakanese and of course Buddhists. It must be remembered that the disturber and taker of a nest of turtle's eggs is deserving of as much demerit (*akutho*) as the taker of life; both are in colloquial Burmese (*yetssetthu*). Upon both the pious Buddhist, while content to enjoy the luxuries provided, looks down with horror.

The eggs of the turtle and of the tortoise are laid about 18 inches to 2 feet below the surface well generally above highwater level. The turtles' eggs are taken daily the first thing in the morning. The animals leave their foot-prints in the sand, showing approximately where they have laid. The men, armed with long iron pointed sticks, poke about until they find the exact locality. The nest is then opened by hand and the eggs taken. As the foot-prints are so recent it is comparatively few nests that escape detection. Maung Nyo Tun, the man who has actually worked Diamond Island for nearly twenty years, thinks that he misses at least five nests a day in the monsoon and after rain, that is, I think, very probable,—after rain. The tortoise eggs, on the other hand, are taken at one time only after the reptiles have been laying some days and weeks. Here the finding of the nests is more difficult because one tortoise may, and frequently does, obliterate all traces of a predecessor's footsteps. In addition therefore to the ordinary employés the lessee usually, when he has got as many eggs as his men can find, invites the inhabitants of the neighbouring villages to come and search for the eggs, they receiving so many per cent, of the number found—sometimes, where the bank is near and the eggs left supposed to be many, 10 per cent., sometimes and under less favourable circumstances 25, 33 or even 50 per cent. The Diamond Island lessee has all his eggs sent to Bassein. There he sells what he can retail and the rest he sends to Rangoon and Prome to his agents for

sale and distribution in other towns and villages. The other commercial banks, Thaungkadun, Kaingthaung, Amatgale, Pyinsalu, dispose of what they can on their banks and send the rest to the larger towns in the interior, Kaingthaung and Thaungkadun principally to Rangoon. A considerable number of small boats are engaged in the trade. These go down to the banks, buy what they can afford, generally 10,000 or so, and returning quickly retail them in the delta villages; but as eggs addle quickly the profits are frequently small or there may even be losses. The To bank supplies local requirements. Hainggyi, Kabaunghmaw, Ngayôtkaung, Sinma, Bawmi also supply local requirements. Pyinkayaing and Nganchaung supply the local trade in the delta. The eggs on the west coast are sometimes bought by local men and carried across the hills to the Bassein river, one man carrying 800 to 1,000 eggs. Salt is largely used for preserving the eggs, and is doubtless better than nothing, though the best antiseptic is—according to a statement in a recent *Field* and which the Editor said was well known—limewater, though how prepared was not stated.* The prices of eggs vary according to kind and proximity to markets. The eggs of the green turtle fetch in Bassein Rs. 1-8-0 per 100 readily; lower down at the mouth of the river Rs. 1-4-0 is paid. The loggerhead eggs fetch Re. 1 to Rs. 1-4-0 readily on the banks of the south coast; Re. 2 per 100 on the southern part of the western coast; 13 annas higher up at Ngayôtkaung and 11 annas at Sinma; above that local requirements keep up the price. In Rangoon Rs. 2-8-0 to Rs. 3 and sometimes fancy prices, such as Rs. 3-8-0 and even Rs. 4, are paid for eggs retail. The eggs of the tortoise sell readily on the banks for Rs. 3-8-0 to Rs. 4 per 100, being three times the size of the eggs of the green turtle and of the loggerhead. Some are sent to Rangoon, but the market is more fancy than commercial. The eggs are consumed all over the delta and in the larger towns of Upper Burma, principally by well-to-do Burmans, though in the former part of the province a family unable to afford the luxury of turtle-eggs is rare. Europeans rarely eat the eggs, for no apparent reason. Ramasawmy makes most excellent buttered eggs out of them and the yokes raw of two or three enable one to travel all day without further sustenance. It is said in Bassein that many thousands are given to the *pông*; is during the Buddhist lent. The Diamond Island lessee confirms this statement and informs me that he can always get rid of his eggs in the rains, fortunately the best time for the turtles and the season of lent. As regards prices in past years there is not much evidence; prior to 1881 none, so far as I am aware. In 1885 the lessee applied for a remission of revenue and filed accounts for 1881, 1882, 1883 and 1884, showing the Bassein prices at Rs. 145 per 10,000 for each of those years. In 1886-87 there was a fall to 100. For several weeks there was no market at all on account of the war and subsequent disturbances. In 1887-88 the market had recovered, prices remaining stationary until 1894-95, one of the years of the paddy-rising, when, like all other commodities, the rate fell to Rs. 70 and Rs. 80. With the break-up of the millers' combination turtle eggs resumed their former price, Rs. 150 per 10,000, at which they now remain. Speaking generally, then, it may be said that the market for the last 17 or 18 years has remained constant, and shows no sign of any change.

The habits of the green turtle.

4. To turn next to the habits of the turtles and tortoises.

The green turtle may be said to lay only on Diamond Island as the few thousand eggs deposited by a few stray members of the species on other parts of the coast may be left out of account altogether. I have been given by the present lessee of Diamond Island his accounts for parts of 14 years, from which I have compiled Appendices IV, V, and VI. As regards these accounts a word is necessary.

The lessee's agent and head servant on the island has daily for many years past kept an accurate account of the number of turtles laying and in even hundreds the number of eggs laid. Prior to 1897 this was kept with Burmese dates and there has been considerable difficulty in giving the English equivalents, as some

* See *Field* for the 15th October 1898. "One ounce of lime to a gallon of water. Care should be taken that fresh slaked caustic lime is employed."

Burmese dates were omitted and now and then a date put in. As far as possible, I have attempted to get the exact English equivalents. Figures in squares represent new moons and those in circles full moons. I have also prepared a statement, Appendix VI, showing the number of turtles laying and the number of eggs laid every lunar month, a red cross signifying an incomplete increase or decrease. The months are true lunar months, but have been given Burmese names. Appendix V is an abstract, calendar month by calendar month of Appendix IV, the daily account.

A good deal of the following information is given in my notes on Diamond Island, but the matter is too important to omit here. Taking the official year, or what I may call the turtle year, as commencing in *Tagu*, the following table gives for 13 years (1883, 1884, and 1885 are incomplete and some of the others partially so) the number of turtles laying and the number of eggs laid.

	Number of turtles.			Number of eggs laid.		
1883-84	11,855	...	...	1,406,330
1884-85	15,780	...	...	1,850,400
1885-86	19,993	...	...	2,337,000
1886-87	17,926	...	...	2,104,500
1887-88	11,859	...	...	1,389,300
1888-89	16,703	...	...	1,930,800
1889-90	17,199	...	...	2,011,500
1890-91	12,077	...	...	1,431,300
1891-92	14,143	...	...	1,671,000
1892-93	13,690	...	...	1,621,200
1893-94	12,847	...	...	1,509,100
1896-97	12,808	...	...	1,511,700
1897-98	13,797	...	...	1,668,400

An examination of Appendix IV will show that had the accounts in 1883-84 and 1884-85 been complete, the take would have been well over two millions. In 1885-86, and 1886-87 the actual take was over two millions. In 1887-88 it was 1,400,000, rising again in 1888-89 and 1889-90 to two millions and falling in 1890-91 and following years to an average of about 1,600,000.

It is commonly asserted that the turtles are so timid that the appearance of mankind anywhere in their immediate neighbourhood frightens them away. On this very ground the present lessee has twice received large remissions of revenue, and on a third occasion made an enormous claim, the very magnitude of which excited suspicion and induced an enquiry. Had the lessee been more moderate, he would probably now be Rs. 5,000 the richer. Now what are the facts. In 1885 January 6th to the end of February, the Telegraph Department were engaged in picking up a lost cable north of the island and between the island and the mainland. On the ground that the turtle had been frightened, the lessee received a remission of Rs. 1,000, one-eighteenth, say, $5\frac{1}{2}$ per cent., of his total revenue. Now the accounts are not quite complete for 1884-85. The year, however, was exceptionally favourable. For the month of January, however, one of the months of the disturbance, the accounts are complete for 12 years, out of which in five more and in six less eggs were laid in than in 1885. For the month of February accounts are complete for 11 years only, the number of years in which more and less eggs were laid than in 1885 being equal. It is also remarkable that in the season immediately following this disturbance the turtles visited the island in larger numbers than ever and were more prolific than ever; in fact the year 1885-86 was the best recorded. In 1888-89, however, the Deputy Commissioner reported that on account of the laying (regaining?) the cable in 1884-85 the industry has not yet recovered its former value. 1886-87 was another good year, so that the cable operations of 1884-85 had no effect whatever on the turtle unless indeed they attracted the reptiles to the island. The next serious disturbance for which the lessee claimed no less than Rs. 10,589 occurred in the open season of 1889-90, when a party of marine surveyors with launches, boats, &c., appeared and stayed on the island surveying the rocks and shoals all round the island and as far out as the Alguada Reef and light-house. "Three or four steam-launches" were in daily use. Now an examination of the accounts shows that the season of 1889-90, June to November, was very favourable, but that the months during which the marine survey were at work were exceptionally unfavourable, the number of turtles laying in December, January and February being 1,098,815,

and 721 against averages of about 1,300, 1,000, and 800. The telegraph operations were, it must be remembered, on the north of, and about 2 to 3 miles away from, the island and one launch only was used. The marine survey operations, on the other hand, were mostly towards the south—the way the turtles come from the Andamans, and three or four launches were in use. The next disturbance was in 1893-94, when the tide-gauge was built, but as I do not know during what months the building took place I am unable to criticise the figures. It may, however, be noted that the lessee did not consider himself injured for he applied for no remission. It may therefore be assumed that disturbances to the north of the island and on the shore of the island during daylight do not affect the turtle in any way, but that the plying of launches towards the south does affect them, frightening them away. Up to 1889-90 the take was 2,000,000 eggs yearly. It then fell to 1,400,000 and has since been about 1,600,000 with a slight tendency to rise. My explanation of this is as follows: The Diamond island telegraph office was opened in December 1877, subsequently closed, and reopened again. About 1890 the number of steamers and ships using the island as a point of call for orders began to increase and is now about 400 annually, every one of which passes over the very ground, or a part of it, traversed by the turtles *en route* from the Andamans and Preparis. Now it is not a too great stretch of imagination to assume that a young turtle brought up, say, in the Andamans, unused to the luxuries of civilisation should somewhat resent the movements of a steamer in its neighbourhood and, resenting them, that she should return to her habitat is but natural. Wild animals, however, of every description are susceptible to education, and it is probable that the turtles are now getting used to the ocean traffic and will in a year or two visit the island in their former numbers. It is in my belief more than probable that the small number of turtles coming in 1890-91 was due to the use of the steam-launches by the Marine Survey in 1889-90 as well as to increased ocean traffic. I think therefore we may conclude that the green turtle does not in her natural state approve of steam traffic, but is susceptible to the softening influences of education. And, further, that she has no objection to the Telegraph Department picking up cables between the island and the mainland.

The next deduction to be drawn from the Appendices IV, V, and VI is that, although the turtle lays all the year round, July to November are the favourite months. The number gradually decreases after December till March and April, and then gradually increases, until October, when the maximum number is reached. Roughly July to November, five months, yield $2\frac{1}{2}$ lakhs a month, say, a million and a quarter against 400,000 for the rest of the year and excluding the close season 1st April to 15th May. In the rains, too, the turtles lay more eggs than in the dry weather, the average at the former time hovering about the figure 120, and at the latter varying from 100 to 110, say, 105. Why the rains should be the more favourite time for laying is very difficult to understand. The turtles themselves in the act of laying show that they take every precaution against exposing their eggs to the elements. Mr. Collier informs us that the eggs hatch out quicker in the dry weather than in the rains, and villagers say that if the nests are opened and exposed to the air, or if covered by the sea, the eggs rot. On the other hand, nests are more difficult to find in the rains because a heavy shower washes away all traces of the nest. Monkeys, pigs, man, and other turtles are the less likely to find nests of eggs laid in the monsoon, and it is just possible that turtles hatched in the rains in their turn lay in the rains. However this may be, the fact remains that the rains is the most popular time.

The most noticeable point is that the turtles lay in larger numbers on spring than on neap tides, but this may be as regards Diamond Island only an accidental circumstance. The island is surrounded by a reef of coral, which at low water in February is exposed and never perhaps covered with more than 5 or 6 feet of water. So complete is the ring that large sharks are very rarely seen inside and Europeans bathe with complete immunity from the shore. Between this reef of coral and the mainland is fairly deep water. I offer as a suggestion for the turtle laying in larger numbers at spring tides, that they fear to cross the reef during the neaps, with the possibility of being confined to a limited

area. It is a matter of notoriety that wild animals will not readily imprison themselves. Fish, for instance, when they find their way barred will not avail themselves of the very natural and shady entrances to the death-traps provided for them, but turn and await their fate higher up stream, this notwithstanding an instinct which must tell them that unless they escape at once they will be left high and dry. Again, traps for catching wild animals are useless after the first few animals have been captured.

The turtles come up exclusively after sunset, sometimes just before dark, generally after dark: it much depends on the state of the tide, the reptiles preferring a flood tide and consequently deep water. Maung Nyo Tun, the agent of the present lessee, who has been working on the island for nearly 20 years, informs me that a turtle will, if she encounters a man when coming out of the water, turn and retreat, but that after she has once reached her laying place nothing frightens her. That is not altogether my experience, which is that, unless interfered with when coming up, the turtle does not object to the presence of man. If when just out of the water she is accosted and, as is common, either poked with a stick or critically examined, or an attempt made to turn her over, she will retreat, but she has, I am convinced, no objection to being merely stared at. I saw a turtle come up close to a party of eight Europeans at dinner on the sands, and was informed that another came and interviewed a Christmas tree duly lighted with children dancing round it. I have frequently watched them come up and never seen any sign of fear.

Having arrived at the place where she intends to lay—a spot sometimes selected with difficulty and apparently by caprice—she proceeds to dig a hole 12 inches or 15 inches deep with all four limbs and a curious rotatory motion of the body. In this hold she remains, while with her hind limbs she digs a smaller hole about 9 inches to 1 foot deep and about 3 inches in diameter immediately beneath her copulatory organ. This is probably the most curious part of the whole operation. Two apparently clumsy limbs are curved at their extremities into a ladle and used with wonderful effect in the loose sand. The accuracy and care with which this hole is made defy description. Certainly nature has taught the green turtle to “plough the sands” to some advantage. In digging the holes—both the larger one in which to hide her body and the smaller one in which to lay—the turtle scatters the sands with considerable force (it is not pleasant to sit behind her at this time), and with the sand she frequently scatters the eggs of earlier turtles. I have stated above that a turtle selects the locality in which she will lay apparently by caprice, but I suggest that she selects a site with a view of destroying a rival's eggs. That most animals will kill the offspring of a rival is well known. When the smaller hole is made the turtle proceeds to hide her copulatory organ with her hind limbs. With what purpose this is done I do not know, but suggest that it is to protect the eggs in the act of and after being deposited from the fury of the elements. However this may be, her attempt in this direction may be and probably is from her point of view sufficiently successful, but she leaves a sufficient space between her limbs for an onlooker to witness the actual laying of the eggs. The oviduct is hidden, but the spasms as the eggs are laid and the eggs falling into the hole are both distinctly and clearly visible. At the first ten or fifteen spasms three eggs are laid each time, afterwards two, and last of all one only. While making the hole in which she is to lie and the hole in which she is to deposit her eggs and in laying she exhibits not the slightest sign of fear or modesty. I have three or four times watched the process, always armed with a lantern or a candle—indeed it would be impossible to watch it without a light—and never witnessed any inclination to stop work. When the last of the eggs is laid the turtle proceeds first of all to fill up the hole and then to press the sand down. This is done with her hind feet, and with considerable force, as can be tested by putting one's finger between her limb and, say, a flat oyster shell. Having pressed the sand into a proper consistency, she with all four limbs fills up the larger hole, and as far as possible, obliterates all marks tending to show the exact locality of her eggs. This latter operation is done principally with her hind limbs as she proceeds to move off her laying ground preparatory to re-

tirement to the sea, and done, from a human point of view, clumsily enough, though it is possibly a sufficient protection against her natural enemies, pigs and monkeys. Even an untrained man, however, will find some difficulty in finding the exact locality of a nest.

How often the green turtle lays it is impossible to say. Maung Nyo Tun, above referred to, thinks three times a year, but as he has not one single fact to support his hypothesis it may be disregarded. Mr. C. A. Gilbert, Executive Engineer of Bassein, in 1889 wrote a short memorandum on the Diamond Island turtle-bank for Government, in which it was stated that the "turtle lays from 80 to 200 eggs at one time, returning three or four times at intervals of ten to fourteen days." The evidence on the subject that I have been able to glean is as follows. It is extremely probable that the loggerhead, first cousin to the green turtle, lays three times a year during the months that species lays, September to December. When a green turtle is killed and cut open several hundred (400 to 500) eggs in all stages of development are found. It is obvious from this last fact that the green turtle lays more than once during her life, but whether more than once every year is another matter: from the highly developed state of some of the eggs inside her it is probable that she lays oftener than once a year. I do not think any conclusion can be drawn from the fact of the loggerhead laying three times, as the green turtle lays throughout the year, the loggerhead for only a few months. The point could easily be settled by marking the turtles on Diamond Island as they come up and keeping an accurate record for twelve months.

The next point to consider is the period of incubation. In *The Fisheries of the World* by F. Whympere, Messrs. Cassel and Company, it is stated, page 284: "When the young turtles are hatched, which is in about 15 days, they are white and about the size of frogs." As the latter statements are both incorrect, the young of the loggerhead being black and $2\frac{1}{2}$ " in diameter and the young of the green turtle brown and about 3 to $3\frac{1}{2}$ " in diameter that of the 15 days may also be disregarded. Mr. Gilbert in the report above alluded to gives the period as "roughly three weeks." In the early seventies, on the representation of Dr. Day, steps were taken to preserve the turtles on Diamond Island, and in the discussion that ensued a proposal made by Mr. E. R. Collier, Commander of H. M. schooner *Pharos*, who, according to the Master Attendant, "has had and used many opportunities of observing the habits of the turtle" and thinks that "a close time should be observed in January, February, and March as hatching is quickest" * in these month eggs have hatched after "being 19 days deposited in the nest, while at other periods of the year, when "there is less sun, they have lain more than 30 days before hatching" was accepted by the Chief Commissioner and, apparently to give full effect to the "sun" argument, forty-five days from the 1st April to the 15th May made a close season yearly. The statement that eggs take longer to hatch when there is no sun is certainly curious. Trout eggs take at 50° Fahr. 50 days, and "every degree warmer or colder makes five days difference"—(*Fisheries Exhibition, Literature*, Volume II, page 41). Some curious instances of what the *Field* calls suspended gestation in the badger have recently been given in that newspaper. While not considering the suspended incubation of turtles' eggs by any means impossible, I incline to the more popular and common belief that incubation once commenced proceeds regularly. That is the opinion of every Burmap to whom I have spoken on the subject, many of whom have constantly watched nests and whose opinions therefore are of weight. Maung Nyo Tun ridicules the idea altogether and his is possibly quite the best opinion to be had. As regards the period of incubation, Maung Nyo Tun puts it at 40 days exactly; others at "about 40 or 45 days." With all due respect to Maung Nyo Tun and to the others, I suspect that the period is 42 days. "The inhabitants of the seashore "must be greatly affected by the tides. Animals living either above the mean "high-water mark or about the mean low-water mark pass through a complete "cycle of tidal changes in a fortnight.* * The vital functions of such animals "living under these conditions for many generations can hardly fail to run "their course in regular weekly periods. Now it is a mysterious fact that in

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“the higher and non terrestrial vertebrata, as well as in other classes many “normal as well as abnormal processes have one or more whole weeks as their “periods * * many instances * * might be given * *. The hatching “of eggs affords also a good example for * * the eggs of the pigeon are “hatched in two weeks, those of the fowl in three, those of the duck in four, those of the goose in five, and those of the ostrich in seven weeks” —(*the Descent of Man*, Chapter VI, Note to pages 164, 165, Edition of 1888). “Man is subject, like other animals; birds and even insects, to that mysterious “law which causes certain normal processes such as gestation as well as the “maturation and duration of various diseases to follow lunar periods”—(*Ibid*, page 8). One man on the west coast informed me 42 days is the period, and stated that he had watched nests hatch.

According to the *Flora of India series, Reptila*, page 48, the green turtle is herbivorous, and Theobald, page 344, confirms this. Every villager with whom I spoke on the subject also confirmed the statement. As regards the males of the species Maung Nyo Tun says they come now and again, but only in the rains, make a hole in the sand like the females and then go out to sea. He cannot explain this singular conduct. Perhaps it is evidence of the early androgynous condition of the remote ancestors of the turtle, of which many samples are constantly being published in the *Field* about other species. He also informs me that he sometimes sees the male and female copulating. On one occasion I was present, but whether the turtles I saw were male and female or were copulating I could not say. It took place about 300 yards from shore—about 8 a.m. at high tide. What I saw might have been two females settling their differences.

Immediately the young are hatched they run to the sea, travelling five and six times the pace of their maternal parent at her fastest. Although the water is close (10 yards or so) the effect of this running of the gauntlet is generally most deadly. All the crows and kites in the place assemble in an instant, seemingly from nowhere, and each bird gets a turtle, which is eaten at leisure. Out of, say, 100 small turtles, not more than 50 possibly reach the sea, and then begins the second slaughter of the innocents—small sharks and predatory fishes of every description suddenly put in an appearance, and it is possible to watch the progress of the brood by the snapping of their enemies. In a few seconds all is quiet—either the brood is completely despatched or the fittest and most lucky have escaped and hidden themselves under the nearest rocks. The young turtle has a particularly bad time of it for the first half-minute because, for some reason that I do not understand, he cannot swim under water but constantly, every second or so, puts up his head, evidently to breathe, and consequently his course is limited.

Where do the turtle live after getting safely out to sea? No one whom I have met can answer the question, and it is answered in no book to which I have had access. Surgeon-Captain Anderson in the *Agricultural Ledger* No. 36, states that turtles prefer rocks. That being granted, where do they live? On the coast of Burma, where they are rarely seen, near Preparis or the Cocos or further south? They are, as I stated, constantly met in the Bay of Bengal, and in the Andamans and Nicobars extensively caught. I strongly suspect that the Andaman group is their *habitat* and that Diamond Island is only visited for the purpose of depositing their eggs. Notwithstanding the hundreds that lay there, the reptile herself is rarely met with off the coast of Burma. It is curious, too, that it is only on the small islands off the west coast that the turtle lays, with the exception of Diamond Island. Diamond Island to Preparis is about 62 miles and Preparis to the Cocos is about 45 miles—a total of 107, not a very long distance for a powerful creature to swim—possibly not a day's journey. In *Dictionary of the Economic Products*, Volume V, I Part I, page 433, the following statement made by Dr. Gunther is quoted: “Turtles always resort to the locality where they were born or where they have been used “to propagate their kind.” The fact that Diamond Island is as far as we know very largely used for the purpose of propagating the species would seem to show

that Dr. Gunther's statement is literally correct. I suggest, however, that the green turtle uses the Andamans, Cocos, and Prepara for the same purpose and to the same or even to a much larger extent and that therefore perhaps Diamond Island after all only gets the overflow of the islands further south. Mr. Stanley informs me that twenty and more nests may be seen on the Cocos any morning and half that number on Oyster Island during the springs. Maung Po Mya's expedition found large numbers of nests on Prepara. After all, when Dr. Gunther's statement is considered with a map of the Bay of Bengal in front of one, it would seem only a self-evident proposition. Obviously a rocky coast and sandy bays are not to be found everywhere in the Bay of Bengal, and consequently it would seem that the turtle is forced by having only the choice of a limited area to come to the coast of Burma.

5. The loggerhead lays chiefly on the islands off the mouths of the Irrawaddy and Dalla rivers and only during the months of September, October, November and first part of December. Those are her chief resorts, but nevertheless she lays on the mainland from the To river right round the coast to the Sandoway district, the number of turtles laying and the number of eggs laid getting less and less the further the banks are from what is apparently the favourite resort of the reptile, the Kaingthaung group. They first of all appear in September, four or five of a night, until in October they come in their maximum numbers, 30, 40, or 50. The *modus operandi* in laying is, I am informed, exactly the same as with the green turtle; but as I have never witnessed the act I do not like to vouch for the accuracy of the statement on the word of a Burman. I am also informed—and this may I think be accepted without reservation as so many have witnessed it—that the loggerhead like the green turtle shows no sign of fear in coming up and in laying. Indeed I should imagine from the many descriptions given me that the loggerhead is even bolder than the green turtle. The Burmans call the reptile *kwe* (Anglice, dog), because they say she is as foolish as a dog in depositing her eggs with such publicity. During the laying months every turtle comes up three times to the same bank. The first time she lays between 150 and 200 eggs, the next between 100 and 150, and the last time between 70 and 100. The evidence as to this is, I think, particularly good. A loggerhead now and again will get a limb bitten off by a shark or get damaged in some other way. The marks made by these unfortunates on the soft sand are consequently different from the marks of the whole and strong; and villagers notice that the same marked species appear three times every season. But I learnt of one case that would seem conclusive on this point. My informant was Myat Ngo, a Karen headman of Yupa village, Nganchaung circle, of the Bassein district. He informed me that some 15 years ago and for about 10 years he purchased the bank near his village. Every year three nests of a peculiarly shaped oblong egg were laid; evidently the loggerhead laying these had some malformed oviduct. Some five or six years ago the nests of this particular loggerhead ceased and have never appeared again. That piece of evidence testified to by an intelligent and observant man seems to me particularly good on the point. I think therefore that we may conclude that the loggerhead lays three times and 350 to 400 eggs in all. The period of incubation is, I am informed, on all sides the same as in the case of the green turtle, and I have given reasons for believing that to be 42 days. Bôulenger, *Flora of British India, Reptilia*, page 50, says that the loggerhead "feeds chiefly on crustaceans and mollusca." Theobald calls the species "a coarse feeder" and deplores the ignorance of the butler of the Bengal Club in giving him loggerhead soup—"possibly an unfortunate who had died a natural death" (Theobald, page 344).

As with the green turtle, so with the loggerhead, the question as to where he lives is one that I am unable to answer. However, I make the same suggestion, namely, that the species has its *habitat* in the Andamans and only visits the coast of Burma to lay its egg. One curious statement is made by the residents of Pyindayè, Kadônkani, and neighbouring villages. They say that the loggerhead comes in largest numbers when the wind is in the east. If the conclusion

to be drawn from this fact is that they come from the east, then their *habitat* would appear to be the Mergui Archipelago.

If, on the other hand, as may very well be the case, the east wind is only an indication to the turtle that the south-west monsoon is over and their laying season commencing, then they may come from anywhere, so far as the east wind is any indication to the contrary.

I have met no person who could tell me where the species breeds.

The habit of the hawks-bill turtle. 6. Of the other two species of marine turtles known to naturalists a few words will suffice.

The first is the hawks-bill turtle or parrot-turtle as the Burmans call it, the turtle of commerce, whose epidermal horny shields yield the tortoise-shell. This species only lays here and there, evidently a stranger to these parts, with one single exception. On a small island off the Bawmi circle in the Bassein district about 10,000 eggs of this species it is said are deposited annually during the months of June to September. Burmans whom I have asked cannot tell me how many times the females lay in the year. Apparently over 100 eggs are deposited at a time. According to Boulenger—*Flora of British India, Reptilia*, page 49—the species is plentiful on the coasts of Ceylon and the Maldives. It is with regard to the hawks-bill that D. Gunther made the statement above referred to that turtles always resort to the locality where they were born, or where they have been used to lay their eggs, or rather the statement is quoted under the description of the turtle in *Economic Products*. Anyhow it is clear that the species is very rare in Burma. The gross value of the 10,000 eggs taken on the Bawmi coast cannot be more than Rs. 70 or Rs. 80, representing a revenue of Rs. 40. I think we might as far as possible preserve the species, if it really proves to be the hawks-bill, at all events for some years. It is just possible that the numbers visiting the coast might increase and that Government might realise a revenue from tortoise-shell; "some specimens sell for as much as £4, the price depending on the quality of the shell"—*Economic Products*, Volume VI, Part I, page 433. Of the natural habits of the species I could learn nothing of interest. I have remarked that it lays in the rains and Boulenger states that it is carnivorous,

7. The remaining species is the leathery turtle, so called from its peculiar carapace. The Burmans call it *saung-ya* as the shell is like the fruits of the *saung-ya* (*Averrhoa carambota*).

The following is from Theobald,—“A female of this rare species was captured near the mouth of the Ye river in Tenasserim on 1st February 1862, where she had resorted to lay her eggs * * * The shell measured five and a half feet and it took six men to lift the animal. The species is found in the Mediterranean sea and on the English coast and grows to 800 pounds weight * * * the fore paddle * * * measured 3 feet 3 inches and the body was 2 feet high. When surprised by Burmese fishermen, she dragged six men along with her nearly into the sea, but was overpowered by others running up,” page 344. Mr. W. B. Tegetmeyer writes in the *Field* that he once rode a turtle: “my weight seemed to have no more effect on the animal than a fly would on a horse; its strength is perfectly enormous, although exercised very slowly.” With reference to this last remark tradition relates that a very ordinary sized green-turtle visiting Diamond Island walked away with an Executive Engineer and his wife weighing together some 30 stone with a somewhat corpulent Civil Surgeon trying to stop the runaway by adding his weight to the load. It is certain that they can support and move under gigantic weights.

I do not think that this huge species is quite so rare as it generally supposed. I met several men up the Aracan coast who have come in contact with the monster. As the species is very rare, it might I think be rigorously preserved. About its habits I know nothing and could learn nothing.

8. Before finally leaving the marine turtles it may be permissible to make one or two remarks comparing the green turtle with the loggerhead. Both are very similar in appearance; both lay approximately the same number of eggs at one time; the *modus operandi* in the case of both species

Comparison between the green turtle and the loggerhead.

is the same. Both are equally indifferent to the presence of man, after at all events they have once arrived in the immediate neighbourhood of their laying ground, and the period of incubation of the eggs of both species is probably the same. On the other hand, the average loggerhead is not more than half the size of the average green turtle, the latter weighing from 150 lbs. to 500 lbs.; the green turtle lays all the year round, the loggerhead only for two or three months; and the size of the eggs is somewhat different, that of the loggerhead, weighing about three-quarter of an ounce, that of the green turtle well over an ounce. But the one great difference between the two appears to me to be that, whereas the green turtle apparently prefers the sands of a rocky coast, the loggerhead prefers the sands of a coast fringed with shoals and flats. Why this curious difference? According to Dr. Anderson both prefer rocky bottoms. I suggest that, whereas the green turtle is algivorous and consequently would find his food in larger quantities and of a more suitable quality amongst rocks the loggerhead is carnivorous, probably feeding on the small fish and crustacea that swarm, more especially on all mud sand and banks. Whether the suggestion is worthy of careful consideration only naturalists can determine. One remark in connection with this matter militating against the probability of my suggestion is that there is a considerable concensus of opinion that the estuary tortoise does not eat when about to and when actually laying, and the same fact has been noticed with certain fish. On the other hand the *a priori* presumption is that animals require more food when laying to compensate them for an exhaustive process. But as I have remarked naturalists will be able to confirm or refute my theory.

9. The habits of the tortoises are quite different to those of the turtle and of both species are I am informed nearly the same. The habits of the tortoises. They lay from the middle of January or even a little earlier until the end of February or beginning of March. After the loggerheads have finished laying in November and December the lessees anxiously await the arrival of the early tortoises, using their utmost endeavours to prevent persons trespassing on the banks and thus frightening the tortoise away. Immediately they appear every one in the island leaves except the watchers, who do not go near the laying ground. Every day quite irrespective of the state of the tide the tortoises come out of the sea and sun themselves on the sand from about 2 P.M. till dark. They assemble in herds of about 500. I actually saw two such herds on Thauangkadam, one of about 100 the other of 500, watched them through field-glasses at a distance of about half a mile and could see that they were lying close together, none of the sand on which the sun was shining brightly being visible. Every night a certain percentage of the creatures lay, some 10, some 15, and others 20 to 30 eggs. On no consideration will the tortoises allow themselves to be approached; directly they wind the human species they disappear into the sea; consequently the greatest circumspection has to be used. After the tortoises have been laying for 40 to 45 days a raid is made on the banks and men poking about with sticks easily find the nests and take the eggs. The eggs of both species are very much larger than the egg of the marine turtles and weigh about 3 ounces. This is curious because the species is on an average barely one quarter the size of the turtle. The period of incubation is said by every one to be 70 days and this seems to me to be highly probable and may be accepted as accurate for the following reasons:—The early tortoises come in the early part of January and the places where they lay are carefully marked; 40 to 45 days later the eggs are dug up and opened. If they show as they always do so far as I can learn obvious signs of young turtles, all the employèes of the lessee come on to the bank and the digging for the eggs begins. The period of incubation must be therefore more than six weeks as Burmans, notwithstanding that they appreciate their luxuries high and somewhat rank, do not care any more than other people for half or three-quarters hatched eggs. Villagers say that each tortoise lays three times during the six weeks and each time fewer eggs than the last, beginning with 30 and finally ending with 10. This assertion is made on the ground that men have noticed that tortoises with malformations, a missing limb, a notch in the shell, and so on

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appear three times every season. At this time of the year it of course rarely rains and consequently the marks left by the tortoises are very clear and distinct and are only obliterated by other tortoises. I could get no evidence as to when and where the tortoises breed. Having laid her eggs, however, she falls an easy victim to the villager as apparently for the 40 odd days that the laying goes on she eats nothing. On her return to the tidal estuaries, where her favourite food is to be found, she is ravenously hungry and is trapped in the most flagrant manner possible in *goks*, a species of basket trap baited with the leaves of the *thame* tree. Ostensibly these *oks* are baited and set for *ngadans* (*Pangasius Buchanani*) which abound in the estuaries, but in reality they are set for the tortoises indeed between Pyindaye and Pyinalan the villagers do not hesitate to admit the fact. A live tortoise is worth more than a dead one as it can be carried for slaughter where wanted. Re. 1 is generally paid for the flesh of a tortoise at this time and the shell of the *taik-leik-bein* (*Batagur baska*) is sold to salt-boilers for another rupee, sometimes even more, being almost the only article used for ladling the salt out of the cauldrons. Consequently the *goks* which at high water are submerged are visited every tide as there is always the danger of the victim being drowned as she can only stand submersion for a very limited time. Some men apparently make a business of catching the tortoise. I saw one hut in the jungle on the bank of a creek with a piece of the creek fenced in, evidently, as I was informed was the case, to keep the tortoises till several had been caught when an expedition to Labutta and neighbouring villages could be undertaken for the disposal of the spoil. Many of these places exist, it is said, with every probability.

10. Comparing the loggerhead, the green turtle, and the estuary tortoises it will be seen that whereas the turtles are very bold—indeed without exaggeration they may be said, more especially the loggerhead, to be fearless—tortoises are extremely timid and will, if disturbed, immediately disappear. The turtles lay 100 to 200 eggs at one time, whereas the tortoises lay only 10 to 30; the eggs of the green turtle weigh over an ounce, those of the loggerhead under an ounce those of the tortoises three ounces. The turtles are marine, the tortoises estuary feeders. The green turtle lays all the year round, the loggerhead September to December, and the tortoise January, February, and March. The period of incubation of the eggs of the turtles is six weeks, that of the tortoises ten weeks. The carapace of the tortoise *Batagur baska* is of value to salt-boilers, those of the turtles and the tortoise *Kachuga lineata* are of value to no one. The flesh of the green turtle and of the tortoises is edible, that of the loggerhead is rank. The average green turtle is double the size of the average loggerhead the average loggerhead double the size of the average *Batagur baska*, and the average *Batagur baska* double the size of the average *Kachuga lineata*.

There is one characteristic common, it is believed, to all turtles and all tortoises—the fearful punishment they can stand. An extraordinary account of the difficulties two anglers experienced in killing a river tortoise is given in Theobald, pages 342 and 343, and the following is an extract from a note in the *Field* of the 28th August last by Mr. W. B. Tegetmeier:—

“This gigantic tortoise deposited by Mr. Rothschild has at some previous time in its life been the subject of a very cruel experiment: some one has fired a bullet into the centre of the back. The perfectly circular hole has closed up below, and the animal is apparently at the present time none the worse for the experiment. These large tortoises are in many parts of the world valued as articles of food. The small Greek tortoises sold for a few pence on our steet barrows in London are valued in the Grecian Archipelago. The gigantic tortoise of the Galapagos Islands was killed and eaten, as recorded by Mr. Darwin, who mentioned that, in order to ascertain whether a specimen was in a good condition for food, the natives used to cut a slit in the soft parts and look into the interior to see the amount of fat. If this was not sufficient, the animal was set at liberty until it had arrived at a sufficient degree of fatness and was apparently none the worse for this remarkable internal inspection.

“Another species in Borneo is kept as a substitute for poultry. In due season the females are caught, a hole is bored in the back part of the shell,

“by which they are tethered, and the forty or fifty eggs they lay are utilized for human food. Several of the specimens in the gardens show the holes by which they were secured.”

One curious characteristic of the eggs of both the turtle and of the tortoise is stated. If covered by sea at any period of the incubation, they addle, but are impervious to the heaviest rainfall. Lastly, to deal with the enemies of turtles and tortoises: they have enemies mostly in common. Primarily there are the crows and hawks, which destroy the young reptiles when just hatched and on the way to the sea. Then there are the sharks and dogfish, which destroy them when they get to the sea and even in after-life are not unwilling to take a leg off a turtle. Budins (*Schbrodermi* and *Gymnodontes*, Day) are also said to like young turtles. Then there are, principally on the west coast, crocodiles, which lie in wait for and destroy the unsuspecting loggerhead. Then, again, chiefly on the west coast, are thieves, who kill and open the loggerhead to take the unhatched eggs, and, lastly, there is man, who, whether Occidental or Oriental, likes turtle-soup, though I am bound to admit that very little illicit killing of the green turtle is done.

There is one point in connection with the turtles and tortoises on which I believe there exists a common ignorance, and that is the age at which the creatures begin and up to which age they continue to lay. Some say five, others 10 years. Judging from the size of the smallest green turtle I have seen laying, I should say that the age when they commence to lay is certainly not less than 5.

11. The next point to discuss is—Are the turtles and tortoises decreasing?

Are turtle and tortoises decreasing? To take the turtles first, and the green turtle first of all. The sea fisheries of Burma were reported on by the late Surgeon-Major Francis Day, F.Z.S., Inspector-General of Fisheries, in 1869. The original report unfortunately cannot be found in any public office in Burma. From miscellaneous papers in the Secretariat, however, it is evident that Day thought that the banks were being exhausted because he made certain proposals with a view to protect the turtle. What those proposals were need not be discussed now. They resulted, however, in a close time being fixed for Diamond Island from 1st April to 15th May annually. That is the only form of conservation practised. It follows from what has been said in paragraphs 4 to 7 and 9 about the habits of the turtles and tortoises that the only species benefitted by this reservation is the green turtle, as the loggerhead and tortoises do not lay at that time of the year and the tortoises never appears on Diamond Island. What, then, has been the result of this conservation as regards the green turtle? The close season began in 1874 and has been in force ever since. The rent of the bank was then Rs. 12,100; it is now Rs. 16,100, 33 per cent. increase; population (*i.e.*, demand) in Lower Burma increased at the rate of slightly under 33 per cent. between 1872 and 1881 and of 24.67 per cent. between 1881 and 1891. The average price of paddy for seven years was at the settlement operations in 1879 to 1882 assumed to be Rs. 70 and was Rs. 101.25 in March 1897-98. The most important information, namely, the price of eggs in 1874, I cannot give, but from the Diamond Island turtle-bank proceedings it is clear that in 1881 to 1884 the price in Bassein was Rs. 145 per 10,000. It is now Rs. 150. Taking into consideration an increased demand and an increase in the price of paddy by nearly 50 per cent., I do not consider an increase of 33 per cent. in the rent any indication of an increase in the take. I would regard it as an indication of more competition and possibly of an increased price of eggs. It is notorious in Bassein town that the lessees for many years have belonged to a family party now and again forced by an irreconcilable member to bid more than necessary. As far as prices go, paddy and revenue, I think it is impossible to say that the bank is yielding more now than in 1874. Maung Po Mya, who has known of the bank for 30 odd years, informs me the take was never more than two millions, and generally about that number. This man's evidence is particularly good because his father and grandfather before him have had the lease of the island. From 1883 to date we have accurate figures for most years which I have examined at paragraph 4. The general result is, from 1883 to 1889, with one exception the annual take was constant. Then for some reason,

taken I cannot say, but should imagine that, if the number taken was increased gradually 2,000 turtles per annum might come off the island every year, as well as two million eggs. I would suggest a commencement with 150 per annum to be taken from December to March and only early in the morning so that other turtles should not see a fallen friend. After two years, if the number of eggs did not decrease, the number to be taken might be increased to 300 per annum for another two years and similar increases made every two years on a similar condition. To any one who urges that I am recommending almost complete annihilation I would suggest an examination of a map of the Bay of Bengal and a perusal of Chapter III of the *Origin of species*.

With Diamond Island, however, there is this to be considered: It is popularly supposed that the green turtle comes from the Andamans and lays three times. Does she lay once and then, returning, lay the second and third time there, or does she wait off Diamond island, where rarely seen, and deposit all her eggs there? If the latter, then by killing her after, say, a first night ashore, we shall be losing the eggs that would be laid on a second and third excursion. The green turtle frequently appears singly or in twos and threes up the Arakan coast. But there may be a few which have missed their way during the day-time. I think, however, we might make the experiment of allowing a few turtles to be killed yearly; the further killing can easily be stopped if it is found that the number of eggs are decreasing. On this subject also I feel that Government should take the advice of some specialist.

As regards the loggerhead, the surest guide to the increase or decrease is the revenue backed by prices. Now on the following banks the loggerhead alone lays,—To, Amatgale, Pyinsalu, Pyinkayaing, Hainggyi, Kabaunghmaw, Ngangyaung, Ngayokkaung, Sinma, and Bawmi. An examination of Appendix No. III, showing the revenue realized year by year from each bank, will show at once that the rents received by Government are very nearly stationary—

To has fluctuated between Rs. 50 and Rs. 185, and is now Rs. 100.

Pyinkayaing between Rs. 100 and Rs. 260, and is now Rs. 230.

Hainggyi between Rs. 150 and Rs. 450, and is now Rs. 260.

Ngangyaung between Rs. 730 and Rs. 1,160, and is now Rs. 1,050.

Ngayokkaung between Rs. 200 and Rs. 470, and is now the former.

Sinma between Rs. 120 and Rs. 280, and is now the former.

Bawmi between Rs. 70 and Rs. 125, and is now the latter.

The two banks Amatgale and Kabaunghmaw show decreases. The former was formed in 1895-96 out of the then existing Kaingthaung bank. The rent was then Rs. 1,330 and has gradually fallen to Rs. 710, its present price, which is, I strongly suspect, the result of a combination. I should put the real value down at about Rs. 1,000, as I was informed is its value. Furthermore, a new island, Kadongale, has recently appeared off Kaingthaung and may entice away some loggerheads previously laying on the mainland, if Amatgale can be called the mainland. The decrease in Kabaunghmaw is probably due to an increase in the villages and houses near the bank. The villagers are great thieves in that part of the world and the lessee may have had some difficulty in getting his own. The average rent for the past twenty years and the present rent for each bank are shown in the following table:—

Name of turtle-bank.	Average for twenty-years.	Present rent.
To	91.5	Rs. 100
Amatgale (1)	1,116.9	710
Pyinsalu	402.2	425
Pyinkayaing (2)	178.9	230
Hainggyi (2)	319.3	260
Kabaunghmaw (2)	93.6	20
Ngaungyaung	1,016.2	1,050
Ngayokkaung (2)	357.9	200
Sinma (2)	166.8	120
Bawmi	106.5	125

(1) Average for 13 years.

(2) Average for 19 years.

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As regards prices, I have been unable to ascertain what was the price of loggerhead eggs twenty years ago, but in 1882 to 1884 the price of the eggs of the green turtle was Rs. 145, and now may be taken at Rs. 150, practically no increase at all. Now the price of one kind of turtle's eggs is governed by the price of others, Burmans buying their eggs by size. Consequently, it may be fairly assumed that since the beginning of the eighties there has been no increase of price. We have then a stationary revenue and a stationary price and may fairly conclude that this unconserved species is neither decreasing nor increasing in numbers and that is the very generally expressed opinion of men who have worked the banks for years.

Lastly there are the tortoises. The revenue is more complicated because they lay on two groups on which the loggerhead also lays and on one of which is a valuable fishery. I find it impossible to value the different parts. The opinion of the men working the banks is that the tortoise has become scarce and is becoming scarcer every year. The species has certainly disappeared from the Irrawaddy below Zalun. In 1890 the Assistant Commissioner of Pyapôn made an enquiry into the annual average takes on these islands and in the course of that enquiry was given the following figures by men who had worked the banks :—

Thaungkadun—165,000 tortoise eggs by one man and 95,000 by another, say, an average of 130,000.

Kaingthaung—35,000 by one man and 20,000 by another, say, 27,000.

Hngetyawkyun—8,000 by one man.

So that we may take the following :—

Thaungkadun	...	...	...	...	130,000
Kaingthaung group	...	...	...	...	35,000

Maung Gyi, an old man, who has lived at the mouth of the river all his life and worked the turtle-banks in his younger days, informed me that when he was a young man they used to get three to four lakhs of eggs every year off Thaungkadun. A man who worked the bank some few years back says he got 80,000. In 1896-97, the man who worked the bank says he got 50,000, and the man who worked the bank this year informed the Bogale Myoök that he got 41,000 eggs. On the Kaingthaung group the figures given for 1895-96, 1896-97, and 1897-98 are 28,000, 30,000, and 23,700, respectively. If therefore I assume that the annual take on Thaungkadun is 50,000 and on Kaingthaung 27,000, I am making a liberal allowance for both. The total then at the beginning of the nineties, when the Assistant Commissioner enquired into the matter, was on the two groups 165,000 against a total in 1897-98 of 77,000—a decrease of 53 per cent.

The revenue of Thaungkadun and Kaingthaung in 1890-91 and 1897-98 were—

				1890-91.	1897-98.
				Rs.	Rs.
Thaungkadun	...	...	...	5,510	3,320
Kaingthaung	...	...	...	6,830	4,050
			Total	12,340	7,370

a decrease of Rs. 4,970 or 40 per cent.

If, however, we compare the revenue of the two banks twenty years ago, we find increases—large increases. Kaingthaung in 1878-79 yielded Rs. 2,000; in 1897-98 the same boundaries Rs. 4,760. Thaungkadun in 1878-79 yielded Rs. 2,300 plus a fishery value not known; in 1897-98 the revenue was Rs. 3,320. The average for twenty years of Kaingthaung is Rs. 4,469, the rental in 1897-98 is Rs. 4,760. The average for Thaungkadun for twenty years is Rs. 3,352, the rental in 1897-98 Rs. 3,320.

These figures are very difficult to reconcile. According to them, with a fairly stationary market, the revenue has very largely increased in the past twenty years, whereas, according to the average revenue, the yield must be the same now as ever. I think in this case the revenue is very deceptive and that the men must have combined against Government on several occasions. This is known to have occurred one year and probably has taken place several times.

I prefer the figures of the actual take given the Assistant Commissioner of Pyapôn in 1890 and those given me this year. These show that the tortoise is decreasing rapidly and that, unless protected, will soon be extinct. This view corresponds with the opinions of the men who have worked the tortoise banks for years and may, I think, be accepted without danger. There is really no reason why the men should be untruthful on this subject. They say that the logger-head is not decreasing, whereas the tortoises are. If they said both species were decreasing, I might feel suspicious.

12. From paragraph 11 it is, I think, clear that Dr. Day's fears for the Conservation proposed by Day and others. turtles were unfounded and have been proved by experience to be incorrect. In view, however, of the Lieutenant-Governor coming to a contrary conclusion, a few words are necessary on the remedies proposed by Dr. Day. What the exact nature of the proposals were is not clear, but from miscellaneous papers I gather they were something as follows:—

(1) As alternatives—

- (a) every lessee should be compelled to leave one nest every month, or
- (b) every lessee should be compelled to reserve some 4,000 to 5,000 eggs at the best season of the year for hatching ;
 - (i) the nests to be marked and protected by the circle thugyi, or
 - (ii) the eggs to be removed and buried in artificially constructed trenches and the young turtles liberated at the seashore.

(2) The capturing of turtles to be made a punishable offence.

The second proposal has been carried out by the Fishery Act by penalising the capture of turtles in fisheries, *i.e.*, in water, the capture of turtles on dry land is not punishable. The Chief Commissioner did not approve of Dr. Day's proposals and suggested that banks should only be leased in alternate years. On my visit to the coast and turtle-banks in January I found traces of the first two alternatives and of the Chief Commissioner's suggestion. When auctioning the Thaungkadun bank on 8th September 1873, the Deputy Commissioner recorded that the auction purchaser "promised to leave some eggs." History does not relate whether he did so or not, possibly the latter. The "custom" thus inaugurated has not continued and is now completely forgotten. Any arrangement that leaves conservation to the lessee and leaves him unchecked and not supervised is bad, and I know of no arrangement by which he could be checked or supervised. At Pyinkayaing the lessee (the real, not the dummy, lessee) informed me that in accordance with custom he annually opened four nests, and after satisfying himself that there were eggs closed them again. On being induced to talk freely, he said the custom was useless (*athonmashî*) and humbug (*alaga*), because eggs exposed to the air never under any circumstances hatch. He said that he had carried out the custom for some 15 years, but had never known a nest hatch. It is true that this man is a lessee and consequently interested, but I scarcely think any Burman would, for such a paltry sum, say, Rs. 6-4-0 [4 (nests) × 125 (eggs) × Rs. 1-4-0 (price)], sell such a circumstantial life. Moreover, other men who had opened nests told the same story. It is of much interest to enquire why a nest of eggs once opened should never under any circumstances hatch out. It seems to me that the turtle herself answers the questions when going through the elaborate operation of laying. She carefully protects her copulatory organ, a rudimentary tail to all appearances, with her hind feet and thus protects the eggs, and when she has finished laying she seals up the nest, pressing the sand to the exactly required consistency. I suspect that incubation commences immediately the eggs are laid, and consequently that any change of temperature, even next morning, a few hours only after the event, is fatal to the vitality of the embryo. However, whatever may be the reason, it is clear that turtles' eggs will not stand removal by villagers to artificially constructed trenches. The proposal that reserved nests should be marked and protected by circle thugyis only needs to be stated to be condemned as absolutely unpractical and impracticable.

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When at Pyindayè I was informed that about 25 years ago Government declared all the banks in the neighbourhood fallow, but did not enforce the exclusion of the public, and that consequently villagers got for nothing what they had to pay for before. The result then of conservation on the part of Government has not been very successful. If conservation is considered necessary it is clear that neither of the alternative plans proposed by Dr. Day will be of any use, nor that proposed by the Chief Commissioner. It will be necessary to reserve a bank every two or three years and put a guard of men on it to prevent the villagers poaching. The Kaingthaung group of islands is more favourably situated than any other that I know of, being well away from the mainland. If it is considered necessary to protect the loggerhead, I will submit proposals. It is of little use lengthening this report, already unduly long, on the off chance of Government coming to the conclusion that the reptile needs protecting.

13. In paragraph 11 I have given reasons for believing that the tortoises have very seriously decreased in numbers and stated that they should be protected. The tortoises have to be saved from two classes; from the lessees of the banks, who leave no eggs to replenish the annual waste and from the public, who kill and eat the tortoise whenever they can catch one. I make the following suggestions:—

First.—The islands on which the tortoises lay should be completely protected from the 1st January to the 15th May, the laying and hatching season, once every five years, from which is generally considered to be the age of a young female when first laying. To accomplish this will require an establishment of seven watchers and one supervisor. Two watchers should be on the Thaungkadun group, two on Kaingthaung, and three and the supervisor should cruise about some distance from the islands and visit the watchers on the islands. The watchers should receive Rs. 20 per mensem and the supervisor Rs. 30. A boat could be hired locally and a few rupees, say Rs. 40, spent on huts on Kaingthaung and Thaungkadun group for the watchers.

The cost once in five years would be—

Seven watchers for 4½ months on Rs. 20	...	...	...	Rs.	630
One supervisor for 4½ months on Rs. 30	...	...	...	...	135
Hire of boat, say	...	...	...	...	50
Huts, say	...	...	...	...	40
Miscellaneous expenditure	...	...	...	...	15
			Total	...	870
Add loss of revenue, say	...	...	...	...	2,300
			Total	...	3,170

The whole establishment should be under the Myoök of Bogalè, who should visit the watchers at least once a month and see that they are doing their work, excluding the public from the islands and not permitting any one of their number to visit the laying grounds. All, or at all events most, of the men employed should be local men—men who understand what is wanted. It will be noted that the Fishery Act needs amendment to make a turtle-bank “a fishery” and to penalize any unauthorised person trespassing on “a fishery.”

Second.—The tortoises need protection from the villagers who catch them in *gòks* and with lines on their way back from laying. To accomplish this is more difficult. The *gòks* used are fixed engines within the meaning and definition of that word in the Fisheries Act and consequently require, wherever placed and notwithstanding Rule 36, the special permit of the Deputy Commissioner. At present no one takes out a permit or license and no Government officer would, so far as regards the fish caught are concerned, bother about the matter; but it is a different thing when tortoises are taken. A remedy would seem to be to, within the littoral circles, compel every person wishing to use *gòks* or similar traps to apply to the thugyi of the circle (all littoral circles have circle thugyis, I believe), who would without charge issue a license permitting the holder to use any number of *gòks* or traps of a like nature he might wish to use, but on the condition that he forthwith releases all tortoises taken in the traps and that he does not permit tortoises accidentally caught to be drowned, and will there-

fore visit his traps every tide. That is a somewhat cumbrous method and drastic in nature. Perhaps the following would prove sufficient:—

Issue printed notices every year in all littoral circles “that the catching of tortoises is absolutely prohibited, but that the use of *gôks* and other similar instruments for the purpose of catching fish, although contrary to law, will not be stopped unless Government continues to find that tortoises are trapped. If, however, Government continues to find that tortoises are trapped, it will compel villagers to take out licenses for the use of *gôks* and similar implements. Meanwhile Government has directed its officers (which it should do at once) to prosecute and pass exemplary sentences on all persons found trapping tortoises.” A notice of this sort signed by a high official, say, the Financial Commissioner, might have the desired effect, and would have such if Myoôks and thugyis combined to suppress the trapping that now goes on.

When next the Fishery Act comes up for consideration the absolute reservation of certain species and making it penal to possess a reserved species, dead or alive, should be considered.

14. Together with this report I submit a map showing the banks marked in red ink. To each I have given a number corresponding to the number in Appendices I, II and III, and running from east to west.

Miscellaneous remarks and general recommendation.

The appendices need some explanation.

Appendix I consists of notes on every turtle-bank which explain themselves. Appendix II is a form I am using for the fisheries proper and is not altogether suitable for turtle-banks.

Columns 1 to 7 need no explanation. Column 8 relates to the subdivision of certain banks. The principle applicable to all fisheries laid down in Rule 4 of the rules under the Fishery Act, namely, that the limits of each fishery should be reduced in extent as much as possible to permit of the fishery being worked by the actual lessee, is clearly sound and needs no limitation save this: “each fishery should as far as possible supply a living for one man,” and with this exception the principle must be accepted. Now, of the turtle-banks of the Irrawaddy Division there are but five—Thaungkadun, Kaingthaung, Amatgale, Hainggyi, Diamond Island (and perhaps a sixth Pyinsalu)—capable of being worked by any one man or partnership and of supplying a living to the workers, and may therefore be called the commercial banks. The others consist of a series of small detached banks many miles apart which are and must be sublet to and worked by men residing in the nearest villages. With a sub-lessee a bank is a by-product. He neglects none of his ordinary occupations, but goes out early every morning and collects (if the thieves have not been before him, as frequently happens) what eggs have been laid the previous night. My object in dividing the banks has been to get the actual workers as tenants of Government and so to divert the profits now received by the landlord into the treasury. In some cases, *i.e.*, To, Ngayôkkaung, Sinma, Bawmi, this is impossible as the values of the banks are too small to make it worth the whole of Government to auction or to sell. Theoretically, Government should sell separately every bank that must be worked separately. The clerical labour and trouble involved in collecting the revenue would not be commensurate with the benefit. Furthermore, there is no chance of the local men being rack-rented. If the landlord raises his prices unfairly, or what the villagers think unfairly, nobody buys but everyone steals. To go through the banks—

To—The division will not get the actual workers, but will probably get two actual workers (one for each division) and four tenants instead of now six tenants.

Thaungkadun.—The division will leave the actual worker in Thaungkadun and put one actual worker and two tenants on *Upè* Kaladaik instead of three tenants.

Kaingthaung.—The division will give three banks, each of which is capable of supplying a living to one family, now one man works, but combinations to keep down the prices ensue, and the lessee has difficulty in giving security for any large sum, such as the three banks combined are worth.

Pyinsalu.—The division will, I believe, get the actual workers on the bank.

Pyinkayaing.—The division will, I believe, get the actual workers on the bank.

Ngan-gyaung.—The division will, I believe, get the actual workers on the bank.

Ngayòkkaung.—The division will get at least two actual workers on the ground and reduce the number of tenants.

Appendix I shows exactly the boundaries of the division proposed. It would seem almost superfluous to remark, but experience has proved the contrary, that when once a bank has been divided, no one man should be allowed to hold two banks, or the advantages of division are neutralised. The rather should another man be allowed to hold the bank at a less price than that offered by the man who has already purchased one. Column 9 shows the approximate value of the subdivisions taken either from the actual sub-rents received or from estimates made of take, cost, &c. These estimates may turn out to be very incorrect owing to the untruthfulness of the men. For instance, the Kaingthaung lessee informed me that he got $4\frac{1}{2}$ lakhs of *loggerhead* eggs and that the banks were as good as, if not better than, ever they were. Now 9 to 10 years ago they yielded annually $7\frac{1}{2}$ lakhs and the villagers informed me that the lessee had got 8 lakhs this year. So I have calculated on a take of 8 not $4\frac{1}{2}$ lakhs. Column 10 relates only to fisheries proper. Column 11 shows the actual number of men required to work that I may call a commercial bank and Columns 13 and 14 the wages of the men. The men guard the banks from thieves, collect the eggs, and exclude trespassers when the tortoises are coming up. They receive either a monthly salary or a lump-sum paid in doles as the season advances. They also get board, including tobacco and betel, and lodging on the bank. Columns 12 and 14—practically labour is the only item of expenditure. The huts on the banks are made of bamboos, &c., taken from the banks or adjacent jungles. Now and then a lessee purchases a little salt to preserve the eggs, and he spends a few rupees in propitiating the *nats*. There are the boats he uses and in many cases are essential to his work. In the case of Thaungkadun, Kaingthaung, and Diamond Island I have calculated what the cost of hiring a boat would be if the lessee actually hired instead of owned, because the boats are when not wanted on the banks put to other and remunerative uses. On the non-commercial banks the expenditure is nothing at all, as I have already explained, they are by-products. In Columns 17 to 20 an attempt has been made to give the actual take, either from figures given by the lessees, or when I believed that the worker was deceiving me or when I could not find him, from estimates made from information received on the banks. Column 21 shows the present dates of paying in the revenue. They vary in different districts. In Thòngwa in 1895 I changed and fixed the dates after a cursory enquiry, and did the same in Bassein in 1897 for Diamond Island. The dates for Amatgale are those fixed some years ago for all fisheries of every kind and description in the Thòngwa district. The dates for the Bassein banks (other than Diamond Island) are, I think, very old dates. The principle to be adopted in fixing all instalments of fishery revenue is that the initial expenses and all recurring expenditure should come out of money received for produce sold and as sold, and that Government should take the remainder as obtained and in fixed instalments until the revenue is completely paid. Consequently, with a very small capital, a lessee should never have to borrow either to pay revenue or working expenses, and his profit should come at the end of the season.

On banks on which the loggerhead alone lays, or on which the green turtle alone lays, the matter is simple enough, because the former lays exclusively from September to the end of November or beginning of December, and the latter, though laying all the year round, lays more, and how much more we know exactly in the rains than at other times. For the loggerhead banks: To, one part of Thaungkadun; one part of Kinethaung, Amatgale, Pyinsalu, Pyinkayaing, Hainggyi, Kabaunghmaw; eight parts of Ngangyaung, Ngayòkkaung, Sinma, and Bawmi, I have fixed the amounts and the dates for the payment of revenue as follows: 1st July, 10 per cent., which means either the 1st July, or,

when paid as earnest-money, 1st November 40 per cent., 1st December 50 per cent. These will allow lessees ample time to sell their eggs and to pay the revenue, but will not allow them to retain money, that sooner or later must be paid to Government, in their hands exposed to various risks. The initial instalment, 10 per cent. of the whole, is not large, and can generally be paid with ease and without borrowing money.

For the banks on which the green-turtle alone lays—Diamond Island and one of the Ngangyaung subdivisions—I have fixed 1st July 10 per cent., subject, of course, to the usual *maximum* of Rs. 500 and the balance 1st September 30 per cent. less earnest-money, 1st December 40 per cent., 1st February 30 per cent. Those dates and percentages are in exact accordance with the actual take on Diamond Island and make allowance for the cost of working.

The banks about which there is the difficulty are Thaungkadun, Teikkwet, and Kaingthaung, because on these the loggerhead and the estuary tortoises lay, and it is extremely difficult owing to the untruthfulness of the lessees, to judge of the proportion between the number of loggerhead and number of tortoise eggs laid. I have done the best under the circumstances, made estimates, and taken averages. The whole of the money received by the sale of loggerhead eggs (less expenses incurred) should be paid, in the case of Thaungkadun, in one instalment on the 1st December and the rest of the revenue on the 15th March, by which time the tortoise eggs will have been collected and sold. In the case of Kaingthaung the number of loggerheads laying is so much larger than in the case of Thaungkadun that the early revenue should be paid in two instalments. There is, of course, less objection in leaving a small sum than a larger with a lessee, and the trouble and expense of paying in money to the treasury miles away from the banks must be considered. Of Teikkwet I am not at all certain, inasmuch as the island has only just reappeared and it is more than probable that the tortoises will not resort to it again as they did unexpectedly this year. My dates must therefore be regarded as movable. The revenue in the case of all banks except those on the west coast should be paid into the township headquarters; Diamond Island revenue at Bassein. The banks on the west coast are many miles away on the other side of a range of hills. The revenue for them should be paid to the circle thugyis, who should receive 12 per cent. (Rs. 150 to Rs. 200) for their trouble. They now get 20 and 30 per cent. on land revenue and on capitation-tax collections. This will entail no loss to Government as now the landlords receive more than 10 per cent. in the shape of their profits. Most of that will disappear with my proposed subdivisions.

Column 23 makes various recommendations, which I proceed to deal with one by one.

I have already explained the necessity for, and the principles on which I have recommended, division and need make no further remarks. The next general recommendation is that, where the loggerhead alone lays, the leases should run from 1st September to 1st January, where the tortoise also lays, the leases should run from 1st September to 1st April, and where the green-turtle lays the leases should run from 1st April to 31st March. It is obviously desirable that lessees should not have it in their power to exercise any sort of control over banks when they are not being used for *laying*. This will prevent any attempted blackmailing of fishermen, jungle-cutters, and so on. Where the green-turtle lays the lease must last from year's end to year's end, but the change should be made in April and not, as now, in July. In April the number of turtles laying is smallest, and, being fine weather, the change in lessee can be made with greater ease and comfort than in July, the height of the monsoon.

The next general recommendation is that the general rules should apply. In Appendix VII will be found a copy of the rules referred to, four in number. Rule 1 permits the use of all (except certain named) banks and the adjacent waters by fishermen, but bars the right of using nets at night, while the loggerheads are laying, and the use of any other than recognized drying grounds for drying nets, traps, &c. The necessity for the rule is very apparent and due to a system of blackmail carried on in the Thôngwa and Myaungmya

districts, by which shrimpers are forced to pay toll for using the banks when they do no possible harm, in addition to, in some cases, a tax to Government. The Deputy Commissioner, Thôngwa, "supposes lessees are at liberty to charge what they like to persons *using nets within the limits of their fisheries.*" The Deputy Commissioner, Myaungmya, directs that the owners of *hmyin* nets are not to fish *on a leased turtle-bank*, and not to fish "out at sea within $1\frac{1}{4}$ miles of the bank." It is not clear how any one can "use a net" or "fish," *on a turtle-bank*, as the turtles which visit Burma lay their eggs on dry land. In Bassein the Deputy Commissioner (Mr. Mathews refused to allow the "lessees to blackmail net fishermen." As regards the banks not mentioned in Rule 1, shrimping by daylight can do no possible damage at any time of the year, and, after the loggerheads have done laying, shrimpers should be allowed to use the banks day or night. While actually laying, the turtle should, of course, be left alone. On or adjacent to Taungkadun, Labaing, Kaingthaung, Hngetpyaw, and Kadôngale, the islands on which the tortoises lay, no person should be allowed to land or to fish until the laying is over, and then the fishing season is also over or nearly so. I propose to bar the right of using nets and *damin* traps off Diamond Island and the three islands on the west coast. They are not used now, so no alteration is suggested; I merely legalize the existing practice. It is true that neither *damin* fishermen nor shrimpers would do much if any harm off the islands in the daytime, but they might assemble in large numbers *on the islands*, and, if they did this, they would almost for certain disturb the turtles at night owing to the very limited area of the islands. It may be said that proviso (b) to Rule 1 is not sufficiently definite and that areas should be set apart for the drying of nets and *damin* traps. For practical purposes my rule is amply sufficient. Rule 2 provides for the rights of grazing on turtle-banks, a subject about which there is some dispute on the coast. It legalizes the grazing of cattle anywhere at any time except on Thaungkadun, Labaing, Kaingthaung, Hngetpyaw, and Kadôngale (I include Kadôngale as tortoises may in the near future lay there) between 1st decrease *Natta* and the time the nests are taken, approximately between 15th December and 15th March, which is the time the tortoises are laying and should on no account be disturbed. Cattle will not suffer under this proposed rule as there are enormous areas suitable for grazing in the vicinity. Rules 3 and 4 are an attempt (a) to preserve the leathery and hawks-bill turtle—both rare in this part of the world and the former rare everywhere—and (b) to penalize the killing of any of the marine turtles or the estuary tortoises, not now an offence if done on dry land, whereas penal if committed in the water, an absurd distinction. The necessity for the rules will be seen from a perusal of paragraphs 4 to 7 of this report. The first two rules would appear to be legal, if made under section 8 (d) and (e) of the Fishery Act, as conditions under which licenses to use implements for fishing and to erect fixed engines may be granted. Of the possibility of legalizing Rules 3 and 4 I am doubtful. "The Chief Commissioner may * * * make rules for * * * regulating the conditions on which * * * fisheries "may * * * be let on lease." However, notwithstanding that "to fish" includes to catch turtle, "a fishery" is "any collection of water." If the two rules cannot be made legal under section 8, they might be added as conditions by executive order until the next amendment of the Act. If Government accepts my proposed rules, a fifth (or perhaps only a third) rule, making penalties under section 9 for the infringement of the rules, must be drafted. If it is considered that the proposed Rules 3 and 4 would not be legal under section 8 (c) and the matter is taken up when the Act is next under consideration, it would be better to make the two rules of universal application, not necessarily applicable only to lessees and their friends, under which form it is only possible now, if possible at all, to frame the proposal. The necessity for the first two rules is of immediate importance both to save villagers from being blackmailed and to exclude fishermen from the islands on which the tortoises lay.

The next general recommendation is on the question of security. At present a lessee with a one year's lease gives security for the revenue *minus* the earnest-money; with a more than one year's lease, he gives security for a whole

year's rent. My proposal is that, where a bank depends entirely on the loggerhead (I include Teikkwet as being doubtful), that the existing practice should continue. Where, however, as in the case of Thaungkadun and two of the Kaingthaung group, the banks depend on two different species—the loggerhead and the tortoise—laying at different times of the year, then that the amount of security to be demanded should be reduced to cover the actual risk only. In the case of Thaungkadun the value of the early take *minus* the total cost in proportion to the value of the second take is as 1 to 2. If Government takes as security property valued at 70 per cent. of the revenue less any sums actually paid in advance, there would be at any given moment a security of 70 per cent. of the revenue *plus* the value of the bank for the year, an amount which would, under the most unfavourable circumstances, approach the revenue of the past year if the failure occurred before the working season, and *plus* the amount already paid in and *plus* the value of the bank partially worked out if the failure occurred during the working season. In either case a mortgage of property valued at 70 per cent. of the revenue should be amply sufficient to meet any deficiency. The Kaingthaung early take is to the latter approximately as 8 to 1, and here, too, I propose as security mortgage of property worth 70 per cent. of the revenue. In this case the apparent danger of failure is it is true greater because eight-ninths of the take is in the first part of the season. But the loggerhead is a very sure and certain layer, whereas the tortoise may be completely frightened away by one man walking along the shore. I believe therefore that a 70 per cent. security would be ample. In addition to the actual property pledged, it must be remembered that all sureties are personally liable on their bonds. Diamond Island bank is somewhat different. The actual take on it continues throughout the year. The green-turtle is a certain visitor and lays regularly, and with hardly any change, the same number of eggs year after year, month after month, and week after week. It is clear therefore that property valued at Rs. 5,000 would be ample security for the revenue as the security and the bank remain at any time. For somewhat similar reasons the amount of property to be demanded for "three islands bank" should be 60 per cent. of the revenue. It remains to state that a *sine qua non* in reducing the security is that revenue should be paid punctually on the fixed dates and that non-payment should invariably in the absence of reasonable excuse be met with the full amount of fine the Deputy Commissioner is empowered to inflict under Rule 26.

It will be asked why Government should reduce its security. The answer is that under the present system the bidding for certain banks, Kaingthaung, Thaungkadun, and Diamond Island, is confined to certain classes, who either combine amongst themselves to lower the price of the banks, or who can only give or hire a certain amount of security and consequently can only bid up to certain amounts. For instance Diamond Island has been confined to a party of Bassein Zerbadis for years past. They never under any circumstances do anything whatever themselves, but give security and hire men to work the island. The Thaungkadun lessee paid Rs. 250 for security this year, promising that amount if he made money and Rs. 100 if he lost. The Teikkwet lessee paid 5 per cent. of the value of the property pledged, and the Kaingthaung lessee Rs. 170; smaller sums were paid in the Myaungmya and Bassein districts. Men who can pay for security in this way are few and far between; consequently Government loses both in a lack of bidders and from the successful man having to pay for security. Government is the "predominant partner" in this fishing industry and cannot expect to eat its cake and have it. If it insists on its pound of flesh in the shape of security against all risks, no matter what happens, a security that is never enforced, then it must be content to accept a reduced rent. My proposals give ample security and, I believe, will give considerable relief to lessees. Other miscellaneous but most important proposals about security must be reserved for my report on the inland fisheries. The next proposal is that all banks, bar Diamond Island, should be sold locally every year by the Subdivisional Officers or Township Officers, subject of course to the confirmation of the

Deputy Commissioner. Obviously if split as I propose, Government cannot expect men to come miles to bid for small turtle-banks. They will do what they do in certain cases now—employ dummies. The proposal has the advantage of compelling the Subdivisional Officer to visit the neighbourhood of banks at least once a twelvemonth. In Bassein this advantage on the west coast would be particularly noticeable in other than fishery matters. I propose that all banks should be sold annually. To improve or damage a bank by the act of man is almost impossible. The question of the trouble in taking security is the usual reason given why leases should be for a term of years, but inasmuch as security has to be periodically tested the reason does not appear sound from the point of view of the checking officer. There is no more trouble in checking a new list than an old, a new set than an old. Moreover, as a matter of fact, most sureties are so only for one year. An annual sale will have the advantage of getting rid of all combinations. It is no hardship to the men themselves because a man who does not “get” a bank will as a matter of course turn to *damin* fishing, his real trade. About a lease under the Fishery Act there is a sad lack of mutuality, that essence of all contracts. If the lease is a losing one, the lessee invariably surrenders and Government accepts, as it is bound to do, surrender. On the other hand, where a lessee has a good thing, frequently obtained by fraudulent methods, he of course keeps it and not unfrequently is allowed to remain in possession beyond the time of his lease. I could mention several such cases. The last part of this proposal is that the auction should be in the dry weather, say, January, February, or March; this will make it easier for the purchaser to get his sureties together, easier for the checking officer to verify the security offered, and easier for the selling officer to re-sell in the event of any default. The Diamond Island bank should continue to be sold in Bassein, where purchasers live. I have made one or two special proposals. In the Teikkwet case, the Eyanangat should be altogether excluded from the lease, for the third time in the last 25 years, as it is not a turtle-bank, but simply gives an excuse for the lessee to levy toll from shrimpers as already explained. To the Amatgale lease I propose to add a small piece of the mainland now falling in no bank but worked free of cost by the villagers. In the Ngayôkkaung and Nganchaung cases I propose a small transfer from one subdivision to another, and in the Bawmi case I propose to exclude a small piece and to put it under the nearest headman and ten-house *gaung* with a view to protect the hawk-bill turtles which are reported to lay there. Appendix III shows the revenue for each bank in the division for the past 20 years. Where there is a hiatus a remark in the last column explains the circumstances. I have still a few recommendations of a miscellaneous nature to make.

I have fixed the payment of revenue and the dates of the leases or dates according to the English calendar. This is in accordance with the existing practice introduced in the year 1889 on the recommendation of a Commissioner of the Irrawaddy Division. Prior to that year dates for payment of revenue, &c., were invariably Burmese. Fishermen knew and understood the dates and were contented. Now in the Thôngwa district the *Inkunwun* has at his own expense had a memorandum printed showing the English and equivalent Burmese dates for the payment of revenue, one being given to every lessee. In Myaungmya and Bassein no fisherman understands English dates and the consequence is that before, or as fishery revenue falls due, messengers and process-servers are sent out to warn fishermen to pay. It appears to have been forgotten that nearly all fishing operations proceed and are carried on by the state of the tide. Likewise turtle-bank operations. The green turtle without question and the loggerhead almost for certain appear in varying numbers according to the tide, and consequently Burmese dates, which are approximately lunar dates, are more appropriate than the dates of the English calendar. This is more particularly noticeable with regard to the fisheries. The present system has the one single redeeming virtue (if it can be called such) of exactness. The Burmese dates are practically correct and intelligible to the common sense of common people. After all what are the differences? The following table shows

the equivalents of the first increase *Tawthalin*, first increase *Nattaw*, and first increase *Tagu* for 11 years taken from Mr. Moyle's calendar:—

—	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
First increase, <i>Tawthalin</i> .	5th Sept.	25th Aug.	29th Aug.	3rd Sept.	22nd Aug.	10th Sept.	30th Aug.	19th Aug.	7th Sept.	27th Aug.	16th Aug.
First increase, <i>Nattaw</i> .	8rd Dec.	22nd Nov.	11th Nov.	1st Dec.	19th Nov.	8th Dec.	27th Nov.	16th Nov.	5th Dec.	24th Nov.	13th Nov.
First increase, <i>Tagu</i> .	12th Mar.	31st Mar.	20th Mar.	9th Mar.	28th Mar.	17th Mar.	5th April.	25th Mar.	13th Mar.	2nd April.	22nd Mar.

The extreme variation of first increase *Tawthalin* is from 16th August to 10th September, 25 days; of the first increase *Nattaw* is from 11th November to 8th December, 27 days; of first increase *Tagu* from 9th March to 5th April, 27 days.

It would be a very simple matter to extend by half a moon the dates for the payment of revenue and the commencement and conclusion of a lease in any year in which the Burmese months fall unusually early. It is far easier to do this and far better for fishermen than the existing system of giving them English dates sometimes without Burmese equivalents and issuing reminders to them to pay in revenue. Wherever I have fixed English dates I would suggest the turning them into Burmese as follows:—

- 1st July = First increase *Wazo* or, if an intercalary year, first increase second *Wazo*.
- 1st September = First increase *Tawthalin*.
- 1st November = First increase *Tazaungmôn*.
- 1st December = First increase *Nattaw*.
- 1st January = First increase *Pyatho*.
- 1st March = First increase *Tabaung*.
- 1st April = First increase *Tagu*, and whenever the first increase *Tagu* falls on or before 22nd March I would add half a lunar month to these and all Burmese dates.

The lessee of Diamond Island employs four men regularly on the island and (seven men for the boat, and in the season (July, August, September, and October) another hand or sometimes two and a second boat and crew. The only men who can stand the work and exposure are the west coast men, all or nearly all Arakanese and all without exception opium-eaters. Without the drug the men are worthless and helpless. For years past opium has been purchased in fairly large quantities in Bassein and sent down to the islands by the turtle boat—50, 60, 100 or even more tolas at a time. This is of course illegal, but without the drug it is next to impossible to work the island and supply the egg-consuming public with a favourite dish. I would therefore suggest that the men actually engaged on the island and in the boats plying between the island and Bassein should be allowed under Rule 25 of the rules under the Opium Act to possess 6 tolas each, or double the ordinary amount. This proposal legalises an existing practice.

It might be worth while for Government to consider whether the existing system in vogue for renting Diamond Island is the best that can be devised. At present the lessee hires labour, receives and sells the eggs in Bassein wholesale and retail, and furnishes security. He rarely if ever visits the islands. The real working man is Maung Nyo Tun, who has been on the island 20 years or so. The following plan would certainly answer with him and possibly other men could be found capable of carrying on, and honest enough to carry on, the work. Let Government lease the island to Maung Nyo Tun, the rent to be a percentage of the take. Let the lessee collect the eggs and send them to Bassein weekly or fortnightly, paying all expenses, and consigned to the Deputy Commissioner. On arrival in Bassein let the bailiff take delivery and sell them by auction in lots of 500, 1,000, and 10,000, paying, say, two-thirds of the money to Government and giving the agent the remainder. Of the lessee's one-third let Government annex

(29)

10 per cent. up to a maximum of Rs. 1,000, keeping the money in deposit as a guarantee that the lessee observes the terms of the lease, the principal of which might be somewhat as follows :—

- (1) Accounts to be kept daily and checked daily, or at intervals, by the Telegraph Master, who is also a Police Constable for the purpose of guarding the bank.
- (2) Eggs to be sent in locked boxes.
- (3) Clauses against killing turtle or allowing them to be killed and subjecting himself to a penalty not exceeding Rs. 1,000 for any breach of agreement.
- (4) Lease to be from year to year, but to be renewed on good behaviour of lessee.
- (5) Government to have the right of raising or lowering the percentage taken at the end of any year.

We should then be dealing directly with a working lessee and not with a giver of security only, and both Government and the actual working man would benefit. If my suggestion of permitting turtle to be killed is carried out, we should definitely know the diminution in the number of eggs if any and not have to accept the absurd stories of losses and so on, accepted in the past.

The disadvantages are —

- (1) That the lessee and the Telegraph Master might combine against Government.

My belief, however, is that with the accounts we now possess neither would dare to do so, more especially the former, who would lose his lease, a most valuable property. Self-interest alone would keep him honest.

- (2) At present there is only a limited market in Bassein for turtles' eggs and much of the existing business is done on credit, which Government could not give.

In expect, however, that if Government undertook the auctioning of eggs, traders to purchase and to send to other parts of the province would appear and with ready money. But that this is a real objection I admit. Certain minor details as to the auctions, preservation of eggs, number of men to be employed, mode of checking, permission to sell so many eggs monthly to ships and residents, and so on have not been provided for as until the principle suggested is accepted it is hardly worth while entering into a series of details. I may note, however, that I know of no practical difficulty.

The proposal made in this report to reduce the amount for which security is to be demanded will, as regards Diamond Island, reduce the evils of the present system, but will not in my opinion be an entire cure, because I fancy Maung Nyo Tun and many similarly situated men could not give security for Rs. 5,000 or for even Rs. 1,000, and it is that class of man—the actual worker—we want to get as lessees under Government. Whether, however, this proposal is considered feasible or not, the very greatest care should be exercised in granting remission in future: Rs. 10,000 has been remitted in the past 15 years unnecessarily.

Conclusion.

15. To sum up my recommendations scattered through this report—

- I.—That the Calcutta Museum authorities be consulted as to whether the green turtle and the loggerhead lay in the Cocos and Preparis and in other parts of the Bay of Bengal. If this question can definitely be answered in the affirmative, that the close season on Diamond Island be forthwith abolished. If the Museum authorities, however, are unable to answer the question definitely, the Government send down a small expedition of three or four men by the Indian Marine ship on light-house duty to examine the Cocos and Preparis; that enquiries be made in Ceylon and Bombay to ascertain what arrangements are made there about turtles (paragraphs 11 and 5).

- II.—If it can be definitely ascertained that the green turtle lays extensively and is practically untouched on the Preparis and Cocos, that Government permit the capture on Diamond Island within certain months only of 150 turtles the first year, increasing by 150 every third year up to 2,000—if, and only if, it can be definitely stated that turtles are not decreasing (paragraph 11).
- III.—That the tortoises be protected once in five years as suggested (paragraph 13).
- IV.—That the existing banks be split as suggested in paragraph 14 and Appendix II.
- V.—That the dates (Burmese dates) suggested and the instalments should fall due as suggested in paragraph 14 and Appendix II.
- VI.—That the leases should run as suggested in paragraph 14 and Appendix II.
- VII.—That the rules, Appendix VII, proposed in paragraph 14 should if possible be legalised and a notice explaining them printed and issued on the coast (paragraph 14), and the orders of the Deputy Commissioners, Thôngwa and Myaungmya, withdrawn (paragraph 14, Appendix VII).
- VIII.—That the proclamation suggested in paragraph 13 be issued annually.
- IX.—That when next the Fishery Act comes under amendment the power of Government to protect any duly notified species of turtle or tortoise should be recognised (paragraphs 13 and 14); that Government should have power to exclude the public altogether during certain months from certain banks (paragraphs 13 and 14); and that for the purposes of the Act a turtle-bank should be considered a fishery (paragraphs 13 and 14).
- X.—That the value of property required to be pledged to Government as security for the revenue should be the amounts shown in paragraph 14 and Appendix II.
- XI.—That the revenue should be payable to the official suggested in the notes, Appendix I, and paragraph 14 and Appendix II.
- XII.—That Government should consider the question of the leasing of Diamond Island, paragraph 14.
- XIII.—The Kaingthaung group of islands should be declared part of the Thôngwa district (see notes on that bank, Appendix I).
- XIV.—That the men employed working Diamond Island should be allowed to possess 6 tolas of opium (paragraph 14).
- XV.—That the miscellaneous recommendations made in Appendix II, last column, see also paragraph 14, be carried out.

F. D. MAXWELL, CAPT.,

Deputy Commissioner.

APPENDICES.

(1)

APPENDIX I.

To, 229.—*Tónmayan circle, Dedayè township, Thóngwa district.*

Some time prior to 1878 this bank was thrown open in favour of *damin* fishermen. The papers in connection with the opening and the re-selling of the bank are missing.

The bank is a sandy stretch of coast line about 14 miles as the crow flies from the mouth of the To river to the mouth of the Thandaik river and is made up of the following smaller banks on which the loggerhead lays and which are sublet separately :—

	Rs.
(1) Pyinkalè sublet for	20
(2) Kayirkwin sublet for	25
(3) Nyaungwaing sublet for	30
(4) Tawkayin sublet for	50
(5) Kyônkanut sublet for	5
(6) Thandeik sublet for	20
Total	<u>150</u>

The lessee himself does no work in connection with the bank.

The loggerhead is the only turtle that lays on the bank, although an occasional stray estuary tortoise appears.

The eggs of the loggerhead sell readily for Rs. 1-4-0 per 100 in the vicinity of the banks.

The cost of working these small banks is in reality nothing. As the sub-tenants, all men who live close by, merely walk out the first thing in the morning and take the eggs. They do not sacrifice their ordinary occupations.

The average take may be put down as 15,000 eggs.

The bank as at present sold is too large to be worked by one man and should be divided into two portions. At the Ngapè *chaung*, which would make each half of equal value, as the Pyinkalè, Kayinkwin, and Nyaungwaing banks would fall into the eastern part and the Tawkawyin, Kyônkanut, and Thandeik into the western half.

The Dedayè Myoók should sell the banks at To, in the neighbourhood of which village purchasers are to be found every year in the dry weather. The lease should run from 1st September to 1st January. The proposed rules should apply.

Security for the whole of the revenue should be given less any sum paid when sold for one year only.

The names of the proposed subdivisions should be Tonyaungwaing and Tawkayin as showing what is sold.

(2)

THAUNGADUN, 223.—*Pyindayè and Tkazi circles, Bogalè and Pyapôn townships, Thóngwa district.*

This bank extends from the mouth of the Pyapôn river to the mouth of the Bogalè or Dalla river, some 30 odd miles as the crow flies. On the extreme west is the island of Thaungkadun, giving its name to the bank; to the east of Thaungkadun is Lapaing, also an island. To the east of Lapaing again the mainland is divided into three small banks and sublet as follows :—

	Rs.
Magnaun	70
Thaungyi	80
Petpyè	25

On the mainland the loggerhead alone lays, but on the islands the tortoises as well as the loggerheads lay. In fact at one time the value of the bank depended on the tortoises. The lessee also has the exclusive right of fishing between the islands and the mainland. That he should have this right is imperative, otherwise fishermen would have it in their power to take the turtle-bank when the tortoises appear valueless. Formerly this right was auctioned alone and ill-feeling and disputes resulted.

The manner of working the bank is similar to that of working Kaingthaung. In addition, however, the water between the island and the mainland is annually fished with nets, *bawuns*, or whatever else the sub-tenant feels inclined and is permitted by the lessee to use.

This year the right sold for Rs. 350. A few years ago Rs. 1,000 was willingly paid, but the bed of the sea between the islands and the mainland has silted up considerably recently and gives every promise of silting up altogether. Indeed, Thaungkadun and Lapaing are now only islands at high water.

(2)

The bank as it stands at present is far too large. The eastern half from the Pyapôn river to the Upè creek should be divided off and called "Upè-Kaladeik" and sold separately. To the west of Upè creek everything should continue to belong to the Thaungkadun bank including the right of fishing.

Here, again, in attempting to estimate the outturn I am confronted by the lessee's untruthfulness. He says that he has taken 81,600 loggerheads' eggs this year and got 50,000 tortoises' eggs last and 41,000 this year. In 1890, however, two men who had worked the bank made the following estimates:—

	Logger-heads.	Tortoise.
Maung Tha Dun Aung	240,000	165,000
Maung Po Kun	150,000	95,000
Total	390,000	260,000
Average	195,000	130,000

Say, 2 lakhs, 1¼ laks valued now as follows:—

	Rs. A. P.	Rs.
Loggerheads, 200,000 at	1 2 0 per 100	= 2,250
Tortoise, 125,000 at	3 8 0 per 100	= 4,375
Total		6,625

I would not, however, allow for so many tortoise eggs, as I think it is clear that the numbers of this species are decreasing. I think a fair estimated outturn would be—

	Rs. A. P.	Rs.
Loggerheads, 150,000 at	1 2 0 per 100	= 1,687
Tortoise, 50,000 at	3 8 0 per 100	= 1,750
Total		3,437

It will be seen therefore how serious a matter for the continuance of the bank is the preservation of the tortoise.

The working expenses of the islands are—

	Rs.
Five men on Rs. 85 and Rs. 75	385
Food, say, six months at Rs 4	120
Boats, say	100
Total	605

The employés get portions of their pay doled out to them as the season advances. Two-thirds of the above expenses may be put down as paid in the first part of the season and one-third in the second.

Practically the initial expenses are small, a few rupees to the coolies and a few rupees for their food.

The present dates for the payment of the instalment of revenue are—

	Per cent.
1st July	20
15th September	10
15th October	10
15th January	30
15th February	30

They should be—

	Per cent.
1st July	10
1st December	30
15th March	60

The lease should run from 1st September to the 1st April yearly.

The value of the fishery is excluded from these calculations as there is every probability of its proving valueless in a year or two.

As regards the three small banks to the east of the Upè creek, they should be called "Upè-Kaladeik lait-thaung" and should be sold separately. The revenue should be paid—

	Per cent.
1st July, or on sale	10
1st November, or on sale	40
1st December, or on sale	50

When the working is over the lease should run from 1st September to 1st January. The Thaungkadun bank should be sold at the same time as the Kaingthaung.

(3)

The Upè-Kaladeik should be sold by the Pyapôn Myoôk at Kaladeik some time in the dry weather after giving the notice in Upè-Kaladeik and Thamuntaw.

The revenue of the Thaungkadun bank should be paid to the Myoôk of Bogalè and security for 70 per cent, of the revenue (less 10 per cent in any year in which the bank is sold for one year) only should be demanded. This will afford some small measure of relief to the purchaser, as property on the coast is of little value and security has frequently to be paid for.

The revenue for the Upè-Kaladeik subdivision should be payable to the Pyapôn Myoôk, and security should be demanded for the whole of the revenue less any amount paid in when sold for one year only.

All the general rules should apply to these banks. I have shown Upe-Kaladeik as in the Pyapôn township.

This is not strictly correct, but the larger portion is in that township.

TAIKKWET, 412.—*Pyindayi circle, Bogalè township, Thongwa district.*

This bank cannot with any accuracy be with called a turtle-bank. It consists of a small mud island that has recently appeared at the mouth of the Bogalè or Dala river and a stretch of mainland called *Eya nankat* between that river and the Irrawaddy.

A few loggerheads and tortoises lay on the island ; about 5,000 eggs of each were taken this year and a stray loggerhead or so now and again on the mainland. The lessee, however, enjoys the right of collecting money from shrimpers using the water adjacent to the bank.

In 1873 and again in 1884 the bank was thrown open as it was discovered that the lessee was doing what he has in 1897-98 received permission to do.

The whole transaction in 1897 was fraudulent, the application to have the banks auctioned showing Nankat as an island in the Bay of Bengal. The very word should have put the Myoôk to whom the application was referred on his guard when he made enquiries ; a *nankat* cannot be an island.

Almost immediately after the auction the purchaser put in the usual petition asking to be allowed to levy a tax from shrimpers, and the Deputy Commissioner ordered "I suppose petitioner is at liberty to charge what he likes to persons using nets within the limits of his fishery." This does not appear to be correct, because the limit of the fishery, *i.e.*, the turtle-bank, is the sea ; consequently in no part of the "fishery" can nets be used.

The Taikkwet island might be sold yearly by the Myoôk of Bogalè at Kadônkani in the dry weather or by the Subdivisional Officer, Pyapôn, simultaneously with Thaungkadun and Kaingthaung.

The *Eya nankat* should certainly be thrown open.

The instalments should, according to the take in 1897-98, be payable as follows :—

	Per cent.					
1st July	1
1st December	20
15th March	70

Security should be given for the whole of the revenue, but less the amount paid in advance in any year in which the bank is sold for only one year.

All the general rules should apply to the bank.

The lease should run from 1st September to 1st January.

KAINGTHAUNG, 203.—*Pyindaye circle, Bogalè township, Thongwa district.*

This bank consists of three islands at the mouth of the Eya river or Irrawaddy, Kaingthaung, Hngetyawkyun, and Kadangale. Geographically the islands belong to the Shwelaung township of the Myaukgmya district and were formerly, together with a strip of the mainland in that township, sold as one bank. Part of the latter was separated and sold as the Amatgele turtle-bank in 1885-86 and the rest called Pyinnankat separated, but has not yet found a purchaser in 1895.

Kaingthaung and Hngetyawkyun are about 2 miles from the mainland and 1 mile from each other, and have been in existence for many years.

Neither are marked on the map I submit together with this report, so I have put in their positions roughly in manuscript.

The position assigned by Fitzroy to Kaingthaung is certainly not correct, the island lying considerably more to the west than shown. The third island, Kadôngale, has only appeared within the last two or three years. It is situated 2 or 3 miles due south of Kaingthaung and is just visible from a 20-foot platform on the latter. Kadôngale gives every promise of becoming of considerable value, but only, I suspect, at the cost of banks on the other parts of this and adjacent coast.

The present manner of working the combined banks is as follows :—

Nine men, the lessee, one partner, and seven hired men live on Kaingthaung moving there in September when the loggerheads begin to lay.

A boat with three or four men visits Hngetyawkyun and Kadôngale, daily or as often as the weather permits ; at times leaving a man on Kadôngale. The eggs are collected at these visits and are periodically taken by boat to Pyindayè and either sold there or sent to Rangoon. At Pyindayè they fetch one-half to one-fourth readily. Towards the beginning

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of December the loggerhead ceases to come up and preparations are then made for the second part of the season's working.

Three men are discharged and only four men allowed on Kaingthaung and none on Hngetpyaw or Kadôngale, which latter, however, is then valueless. These men line in a hut as far away as possible from the sandbank on which the tortoises lay, and have strict orders to on no account go in the neighbourhood of the bank.

Day and night some of the men cruise off the islands to exclude trespassers and thieves, the former at this season the more obnoxious. A coast man will not trust his own son. About the beginning of January the herds of estuary tortoises begin to put in an appearance, sunning themselves every afternoon just out of the sea.

Redoubled vigilance is now required and given. One or more of the watchers creeps up stealthily to the sandbank every morning to watch for the first nests which are carefully marked. From this time no one is allowed to approach the sandbank for over 40 days. Then towards the end of February a few of the first nests, which have been duly marked, are open and, if the eggs shown signs of being neatly hatched, the lessee, his relatives, friends, and establishment proceed to dig up the nests they can find. Many after this process remain and villagers are permitted and encouraged to come and dig, receiving practically whatever they demand in this particular instance, usually about 20 per cent. of their takings. After this second search it may be safely said that not one egg in 1,000 can possibly be left. Once the search for the tortoise eggs commences the reptiles cease to lay.

The eggs are taken to Pyindayè, and either sold there or are sent to Rangoon, fetching from Rs. 2-8-0 to Rs. 4 per 100 : generally the latter readily.

The working expenses of the three islands are as follows:—

First part of season.

	Rs.
Seven men for four months at Rs. 12 and Rs. 10, say	... 296
Food for the above at Rs. 4 a head per mensem, say	... 112
Two boats, if hired, say, ... ..	... 100
Total	<u>508</u>

Second part of season.

	Rs.
Four men for three months at Rs. 12 and Rs. 10 ... ..	... 132
Food for above at Rs. 4 ... ..	... 43
Two boats, if hired, say, ... ..	... 75
Total	<u>255</u>

To give any estimate of the actual take on the three islands is difficult owing to the untruthfulness of the lessee, who puts down the number of eggs annually taken as follows:—

	Rs. A. P.	Rs. A. P.
Loggerheads, 450,000 at	1 2 0 per 100	= 5,062 8 0
Tortoise, 30,000, at... ..	3 8 0 ,,	= 1,050 0 0
Total	...	<u>6,112 8 0</u>

This would give a profit of Rs. 1,299 after paying the revenue of Rs. 4,050. I was, however, informed, in January when in the locality, that the lessee had already got the following:—

	Loggerhead eggs.
Hngetpyawkyun ... ..	... 100,000
Kaingthaung... ..	... 400,000
Kadôngale ... ..	... 300,000
Total	<u>800,000</u>

And I see from the proceedings that another man, when examined in 1890, stated that he annually got—

	Loggerhead eggs.
From Kaingthaung ... ..	... 7,500,000
From Hngetpyawkyun ... ..	... 20,000
Total	<u>7,520,000</u>

Kadôngale was not in existence in 1890. The present lessee admits that the number of loggerheads laying has not decreased, so that my informant was probably correct in his

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estimate, and, if so, with a revenue of Rs. 4,050, the present lessee must be making a profit of over Rs. 4,000 per annum. I should estimate the "take" from and the cost of working each island as follows:—

KAINGTHAUNG.

			Rs.	A.	P.	Rs.
Loggerhead eggs 400,000 at	...	...	1	2	0	per 100 = 4,500
Tortoise eggs 20,000 at	...	...	3	8	0	per 100 = 700
		Total	...			5,200
Working expenses—						Rs.
Two men at Rs. 12 for six months	...	...	...			144
Food	...	...	...			48
One boat, say	...	...	...			50
						242
		Total	...			4,958

The bank should yield, if sold separately, Rs. 3,500.

HNGETPYAWKYUN.

			Rs.	A.	P.	Rs.
Loggerhead eggs 100,000 at	...	...	1	2	0	per 100 = 1,112½
Tortoise eggs 1,000 at	...	...	3	8	0	per 100 = 350
		Total	...			1,462
Working expenses same as Kaingthaung	...	...	...			242
		Total	...			1,220

The island should yield Rs. 600 to Rs. 800 at auction. I am, however, doubtful about this estimate as the island was sublet at end of the eighties for Rs. 420 and has been sublet for Rs. 500.

KADÔNGALE.

			Rs.	A.	P.	Rs.
Loggerhead eggs 300,000 at	...	...	1	2	0	per 100 = 3,375
Tortoise	...	...	...			Nil
		Total	...			3,375
Working expenses same as Kaingthaung	...	...	...			242
		Total	...			3,133

The bank should yield Rs. 2,000 at auction, but as the island has only recently appeared and as it is some distance from the mainland, it may not realize so much for the first year or so.

I would recommend that the three islands be sold separately after due notice in Bogalè, Pyapôn, Kaladeik, Kadônkani, Ema, Pyindayè, U-pè, Naukmi, and Eya, in the Thongwa district; Pyinalan and Labutta in the Myaungmya district; and at Thekethaung and Pyinkayaing in the Bassein district. The Subdivisional Officer, Pyapôn, should sell them annually in April or May at Pyindayè or Kadônkani. I think there can be no doubt, but that the islands are geographically and for all purposes strictly speaking part of the Myaungmya district.

They have, however, in the past generally, I may say invariably, been worked by men from the Thongwa district. I would, therefore, suggest that they be declared part of the Bogalè township of the Thongwa district. Instalments are now payable as follows:—

					Per cent.
1st July	...	...	...	...	20
15th September	...	...	...	...	10
15th October	...	...	...	...	10
15th January	...	...	...	...	30
15th February	...	...	...	...	30

These were fixed after a cursory enquiry in 1895. It is difficult to say what proportion the number of tortoise eggs taken will bear to the number of turtle if the former species is conserved.

At present the values of the two are as 1 to 6 and 1 to 4. I think one-fifth of the revenue in each case might be left to the second part of the season. Ten per cent. is all that should be demanded in July or at the auction. I would, therefore fix the instalments as follows for Kaingthaung and Hngetpyawkyun.

					Per cent.
1st July, or on sale	...	...	...	...	10
1st November, or on sale	...	...	...	...	30
1st December, or on sale	...	...	...	...	40
1st March, or on sale	...	...	...	...	20

(6)

Security for 70 per cent. of the revenue is sufficient, I think.
For Kadôngale the revenue must be demanded—

							Per cent.
1st July, or on sale	...	...	...	...	...	...	10
1st November, or on sale	...	...	...	...	...	...	40
1st December, or on sale	...	...	...	...	...	...	50

as tortoises have not yet taken to laying on the island.

The leases for Kaingthaung and Hngetpyaw should run from 1st September to 1st April yearly and the lease for Kadôngale from September to 1st January.

All the general rules should apply to the banks. If any steps are taken to preserve the tortoises that lay on the islands, it is more than probable that they will increase in number to a not inconsiderable extent. The price of the eggs is not, I think, likely to fall as the demand is constant, the supply very limited, and the consumers are well-to-do. Some few years hence it may be necessary to again change the manner of paying the revenue, making the last instalment more and the instalment payable on the 1st December less. Finally, I may note that the men buying banks in the neighbourhood of Pyindayè have been known to combine to keep down the bidding.

The figures I have given in the general statement are taken as follows:—

The gross number of loggerhead eggs from an estimate, and the gross number of tortoise eggs and their price from figures supplied by the lessee himself. The instalments shown are those for the banks as divided. The cost is as given by the lessee himself. This note has an estimate for the cost of working each part separately. The right of fishing off the banks of this island belongs to the lessee. It will in future be regulated by the general rules, that is to say, that fishing will under Rule I be prohibited. But the lessee himself need not of course enforce the rule made in his favour.

AMATGALE--Lahukyantaung circle, Wakema township, Myaungmya district.

The bank consists of a so-called island close to the mainland between the Amatgyi creek on the east and the Pyinsalu river on the west. The lessee of the bank who was duly warned to meet me did not put in an appearance, so I am dependent for my information on the statement of villagers and of the nephew of the lessee. Loggerheads lay both on the island and on the mainland and in January and February a few tortoises lay on the island. The lessee apparently regards the tortoise as a by-product as he has given over the right to collect their eggs to his nephew. Villagers say that the nephew trusting to an order of the Deputy Commissioner, Myaungmya, prohibiting shrimpers from fishing "on a leased turtle-bank" and "not to fish out at sea within 1½ miles of the bank" is black mailing shrimpers and making them pay sundry rupees for the privilege of shrimping. The number of tortoises that ordinarily lay on the island is small. Most of the shrimpers pay tax for using their nets in other parts of the coast.

The order of the Deputy Commissioner, which is of doubtful legality and not altogether clear, should be withdrawn and shrimpers allowed to fish anywhere along the bank subject only to the restriction mentioned in General Rule I. The bank will then be one from which the eggs of the loggerhead only will be taken and consequently the revenue should fall due—

							Per cent.
1st July	...	...	...	...	...	...	10
1st November	...	...	...	...	...	...	40
1st December	..	...	...	...	...	...	50

instead of as at present—

							Per cent.
1st June	...	...	...	...	...	...	25
1st December	...	...	...	...	...	...	25
1st February	...	...	...	...	...	...	50

The lease should run from 1st September to 1st January. To the bank as it at present exists I would add the Pyinnangat, the portion of the mainland separated from the Kaingthaung in 1895. This small piece is bounded by the Pyinalan river on the east and the Amatgyi creek on the west. Consequently the amended boundaries of the Amatgale bank would be the Pyinalan river on the east and Pyinsalu river on the west. The Pyinnangat is worth about Rs. 25 per annum, too small to sell singly.

I would suggest that this bank might with advantage be auctioned at Pyinalan, or somewhere in the neighbourhood, by the Subdivisional Officer of Wakema, after giving notice in the Bassein district, Ngaputaw township, and in the Thongwa district, Bogale township. The auction might take place any time after, say 31st December yearly.

The general rules would apply. Security should be given for the whole revenue less any sum paid in advance when sold for one year only.

PYINSALU, nil—Kwinbauk circle, Myaungmya township, Myaungmya district.

Consists of five small banks situated between the Pyinsalu and the Thekethaung rivers, a distance of about 16 miles as the crow flies—

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- (1) Pyinsalu } between the Pyinsalu and Pyamalaw rivers.
 (2) Seikyi }
 (3) Pyinkanu } between the Pyamalaw and Dayebyu rivers.
 (4) The Ywè between the Dayebyu and Ywe rivers.
 (5) The Satkat between the Ywè and Thekethaung rivers.

Of the above, (1), (3), (4) and (5) are banks on the mainland, while No. (2) is at high water an island. On the four mainland banks the loggerhead is the only turtle that lays. On the island, however, a few tortoises come and the lessee makes shrimpers pay for the privilege of fishing. The lessee himself worked Pyinsalu and Seikyi this year, sub-letting the remaining three banks for Rs. 200 to a man in the Bassein district, who was absent when I was in the neighbourhood.

The number of tortoises laying on Seikyi is insignificant. To work Seikyi and Pyinsalu the lessee hires three men, two on Rs. 12 per mensem and one on Rs. 10 for four months, and feeds them: a total cost of, say, Rs. 176. He has no other expenses. He says that he got 70,000 loggerhead eggs and has sold them at Rs. 1-4-0 per 100; that would be Rs. 875, leaving say, Rs. 700 after deducting expenses. From the remainder of the bank he gets Rs. 200; Rs. 900 in all.

His revenue is Rs. 600, so that his net income is Rs. 300, in addition to which he makes something, probably Rs. 50 to Rs. 100, from shrimpers using his bank.

Of the cost of working and the take of the remainder of the bank I could get no accurate figures.

The bank as at present sold is far too large. It might be divided as actually worked and sublet.

Seikyi and Pyinsalu in one group to be called as villagers call them Seikyi and Pyinkanu, Ywè and Satkat to be called Ywè, though even these might hereafter be further subdivided.

The boundaries of each bank are well-defined rivers. As only the loggerhead lays on the banks the revenue should fall due as follows:—

						Per cent.
1st July, or on sale	...	...	...	...	...	10
1st November, or on sale	...	...	...	...	...	40
1st December, or on sale	...	...	...	...	...	50

instead of as now. The lease should run from 1st September to 1st January.

Villagers should be informed that they may shrimp at any time of the day or night after the 1st decrease *Nattaw* and any time of the day before that date.

The Subdivisional Officer of Myaungmya might sell the banks at Labutta every year, giving notice in the Myaungmya district and in the Bassein district, principally at Bassein and in the Pyinkayaing circle.

PYINKAYAING, 4—Pyinkayaing circle, Ngaputaw township, Bassein district.

This bank extends from the Thauggalè creek, falling into the Thekethaung river, round Puriam point to the mouth of the Pyinkayaing creek in the Bassein river. It consists of three well-defined banks worked separately—

- (1) From the Thauggalè creek to the Bôndawbyit creek called the Bôndawbyit bank.
- (2) From the Bôndawbyit creek to the Zithaung creek called the Kyônkalat-sun bank.
- (3) From the Zithaung creek to the Pyinkayaing creek called the Pyinkayaing bank.

It will be observed from Fitzroy's map that Puriam point, a rocky promontory, stretches far out to sea, whereas the rest of the bank consists only of the ordinary alluvial mud and sand.

On the Pyinkayaing and Bôndawbyit banks the loggerhead alone lays, but on the Kyônkalat-sun bank a few green turtle come up at odd times throughout the year. As, however, they are few in number the lessee or sub-tenant does not watch for them throughout the year; consequently the eggs are taken by villagers. The expenses of working these three banks are practically *nil*, either the lessee or his tenant putting up small huts on the banks in September and living there until December. The Pyinkayaing and Bôndawbyit banks were sublet this year for Rs. 80 and Rs. 70 respectively, the lessee himself (or rather the real lessee; the auction purchaser was a dummy put forward to buy) working the Kyônkalat-sun bank. The eggs taken in these parts, where they are scarcer than at Pyindayè, fetch Rs. 1-4-0 per 100 readily. I should say that the Pyinkayaing and Kyônkalat-sun banks yield from 7,000 to 10,000 and the Bôndawbyit from 6,000 to 9,000 eggs annually. I would suggest that the bank be divided and sold as actually sublet and worked with the boundaries given above. As only loggerheads lay, the revenue would in each case be payable—

(8)

					Per cent.
1st July	...	...	...	...	10
1st November	...	...	...	...	40
1st December	...	...	...	...	50

instead of as now in one instalment in June.

The leases would run from 1st September to 1st January yearly; and the Myoök of Ngaputaw might auction the banks at Thekethaung and Pyinkayaing every year in the dry weather, giving due notice throughout his township and in the Myaungmya district.

The general rules would apply.

Security must be given for the whole of the revenue less any amount paid in when the lease is only for one year.

HAINGYI, 3—Haingyi circle, Ngaputaw township, Bassein district.

This bank consists of the southern part of Haingyi Island which is a long stretch of sand. The island itself lies at the mouth of the Bassein river, nearer, however, to the west than to the east bank. The only turtle that lays is the loggerhead. The man who worked the bank this year says that he got 35,000 eggs and sold most of them at Rs. 1-4-0 per 100, which would give him a clear profit of about Rs. 180, as he lives just across the river and the collection of the eggs cost him nothing.

The bank should be auctioned by the Myoök of Ngaputaw in the dry weather at Haingyi village after giving due notice in his township and in Bassein. The revenue should fall due—

					Per cent.
1st July	...	...	...	...	10
1st November	...	...	...	...	40
1st December	...	...	...	...	50

instead of as now.

					Per cent.
1st July	...	...	...	...	50
1st January	...	...	...	...	50

The revenue should be paid direct into the sub-treasury at Ngaputaw. The lease should run from 1st September to 1st January. All the general rules should apply. Security would have to be given for the whole of the revenue less any sums paid in when the lease is for one year only.

KABAUNGHMAW, 2—Haingyi circle, Ngaputaw township, Bassein district.

This is a very small bank and extends from Kabaunghmaw creek and village to Pagoda point. Only a few loggerheads lay during the season, about 4,000 to 5,000 eggs being taken. As it is invariably worked by a man from a neighbouring village the expenses are *nil*.

The bank should be auctioned by the Ngaputaw Myoök in the dry weather, simultaneously with the Haingyi bank. The revenue should be payable to the Myoök on the following dates :—

					Per cent.
1st July	...	...	..	...	10
1st November	...	...	...	...	40
1st December	...	...	...	...	50

Now it is payable in one instalment.

The lessee should run from 1st September to 1st January. All the general rules should be applied.

Security should be given for one year's rent less any sums paid in when the lease is for one year.

DIAMOND ISLAND, 1—Haingyi circle, Ngaputaw township, Bassein district.

This locally famous bank is situated at the mouth of the Bassein river.

The revenue for the past 20 years is given in Statement No. I.

For the years previous and as far back as I have been able to trace it was as follows :—

Year.					Rs.
1867-68	...	...	...	...	2,000
1868-69	...	...	...	...	2,000
1869-70	...	...	...	...	2,000
1870-71	...	...	...	...	4,000
1871-72	...	...	...	...	4,000

(9)

Year.	Rs.
1872-73	4,000
1873-74	8,910
1874-75	12,100
1875-76	12,100
1876-77	12,100
1877-78	16,010

According, however, to another paper in the proceedings, in 1863 the life convicts engaged in the building of the Alguada light-house were located at Diamond Island and were allowed to use the eggs. Afterwards the rents were—

Year.	Rs.
1864	3,500
1865	3,500
1866	3,500
1867	5,500
1868	5,500
1869	5,500
1870	8,500
1871	8,500
1872	8,500
1873	12,700
1874	12,700
1875	12,700

This is the only bank in the delta on which there is a close time, 1st April to the 15th May—a close time; it may be noted, that has not always been observed. On the bank and throughout the year the green turtle lays, and in the laying season, September to December, a few loggerheads appear. The hawks-bill turtle has been seen on the island, but the agent of the lessee, a man who has been on the island for nearly 20 years, says he has never seen traces of the leathery turtle. Up to the beginning of the sixties, *i.e.*, before the erection of the present Alguada light-house, there was a light-house establishment on the island from the time of the Alguada till 1877-78. The island was deserted by all save the pilots and dubashes. Apparently they caused great disturbance on the island, for in 1884 the Deputy Commissioner of Bassein thought it necessary to issue a proclamation forbidding any person other than the pilots and dubashes from landing on the island and all persons from going on to the sands at night. "This order, which seems of doubtful legality, has as far as I know never been actually enforced by any penalties" noted another Deputy Commissioner in 1890.

It has never been enforced since. In 1877-78 it was decided, on the recommendation of the commercial community, to establish a telegraph station on the island and this was carried out, a cable from Pagoda point to the island being laid the same year and the telegraph office being opened in December 1877.

It was, however, closed again and in 1884-85 again opened and has, I believe, remained open ever since. Yearly the island is becoming more popular as a port of call for ships from the Cape and Japan and the East generally for orders. In 1889-90 a party of marine surveyors was employed surveying the shoals and rocks as far as the Alguada, with the exception of the year 1884-85, when the Telegraph Department were employed in regaining their lost cable. From 6th January to the end of February and in 1889-90 when the marine survey were at work and in 1893-94 when the tidal gauge was made the island has been left in a perfect state of quiet.

It is noticeable that the lessee in 1885-86, the present lessee Maung Po Mya, received a remission of Rs. 1,000 revenue for (1884-85) on account of the telegraph operations. As a matter of fact that year 1884-85 according to the accounts was an excellent year.

It is further noticeable that Maung Po Mya claimed and obtained first of all a Rs. 3,000 remission in 1887-88 and hiring a firm of Rangoon lawyers a Rs. 6,000 remission in 1888-89 on evidence that these accounts show to be untrue and which must have been known to the witness to be untrue; 1887-88 was a bad year, it is true, but 1888-89 was a particularly good year.

Another attempt in 1889-90 to get a larger remission (this time Rs. 10,589) was made. The Deputy Commissioner, however, went to Diamond Island and examined the daily accounts, thus discovering the true nature of the application.

In 1884-85, 1889-90, and 1893-94 the turtles were more or less very much more, according to the lessee, disturbed. In 1884-85 the yield was extremely good (1,850,400); so also in 1889-90 (2,011,500); in 1893-94 it was 1,509,100.

An examination of the monthly totals in 1890-91 shows the failure was not in the dry weather, but in the rains.

Statement No. IV shows the number of turtles laying and the number of eggs laid during parts of the years 1883 to 1899, night by night.

Statement No. V is an abstract of Statement No. IV, calendar month by calendar month, and Statement No. VI is an abstract, lunar month by lunar month.

No. IV has been compiled from an account kept by the agent of the lessee day by day, showing in even hundreds the number of eggs laid and the exact number of turtles laying.

The greatest care has been exercised in transcribing this account, which has been kept in Burmese and with Burmese dates. Inasmuch, however, as the agent has here and there put in a date and here and there left one out, mistakes may have crept in. Figures in a square represent a new moon, those in a circle a full moon. A cross in red in ink signifies incomplete periods. The daily figures are for the collections made on the day of record; consequently many of the turtles have laid in the previous day, *i.e.*, before midnight.

Statement No. V, showing the totals calendar month by calendar month, needs no explanation.

Statement No. VI, dealing with the figures lunar month by lunar month, however, requires some explanation.

I have compiled it for the official year, which is also the turtle year, assuming that *Tagu* commences the year.

The increase of *Tagu* never corresponds with the 1st April, but it is the best month with which to commence the accounts because the turtles are then laying the smallest number of eggs. Although I have given the months their Burmese names, I have taken real lunar and not the inaccurate Burmese months.

It will be observed that, although the turtles lay all the year round, they come in far larger numbers in the rains and lay on an average more eggs. October is the best month and March or April the worst. Owing to the extreme variation in the figures it is difficult to give any fair estimate, but I think 2,000 might be taken as a monthly maximum and 750 a monthly minimum number of turtles laying.

The average number of eggs laid by each turtle in the rains hovers about 120, and in the dry weather varies between 100 and 110, say 105.

The following table shows the number of turtles laying and the number of eggs laid since 1883-84 every year for which accounts exist:—

Year.	Number of turtles.	Number of eggs.
1883-84	11,855	1,406,330
1884-85	15,780	1,850,400
1885-86	19,993	2,337,000
1886-87	17,926	2,104,500
1887-88	11,859	1,389,300
1888-89	16,703	1,930,800
1889-90	17,199	2,011,500
1890-91	12,077	1,431,300
1891-92	14,143	1,671,200
1892-93	13,690	1,621,200
1893-94	12,847	1,509,100
1896-97	12,808	1,511,700
1897-98	13,797	1,668,400

For 1883-84 and 1884-85 the figures are not complete, but for other years they are fairly so. The take in 1883-84 and 1884-85 must have been two millions.

In 1885-86 and 1886-87 it was over two millions. In 1887-88, the worst year on record, for which I can offer no explanation, the take was 1,400,000.

In 1888-89 and 1889-90 each year it was about two millions, and since then has been about 1,600,000, with a slight tendency to improvement. Now why this sudden drop in 1890-91? The Telegraph Department operations in 1884-85 had no effect whatever on the turtle. My belief is that it was due to the marine survey operations in 1889-90 and the increased shipping that went to the island in 1890 and has continued ever since.

Some 400 vessels, mostly steamers, I believe, now annually visit the island. And for the last 40 or 50 miles their course is very much the course that would be taken by the turtles coming from the Andamans.

The throb-throb of a tramp's screw is not music to the quiet, peace-loving turtle. Of that there can be no doubt. They will get used to it and indeed are getting used to it, but I should think that there can be no doubt, but that when steamers commenced making the island a point of call, the turtles thought they would remain in the Andamans, in my belief their natural habitat. I venture to prophesy that the number of turtles laying and the number of eggs laid will in the course of a few years, when the reptiles have got used to steamers, be as many as ever.

(11)

The cost of working the island is as follows :—

<i>On Island.</i>				Rs.
One man on Rs. 20	...	...	...	240
Three men on Rs. 10	...	...	...	360
Food for four men at Rs. 6	...	...	...	288
<i>Boatmen.</i>				
Seven boatmen at Rs. 37 per trip, three trips per mensem, for six months	...	...	...	666
Seven boatmen at Rs. 37 per trip, two trips per mensem, for six months...	...	...	...	444
Food for seven men for 12 months	...	...	...	504
<i>Extra on Island.</i>				
One man at Rs. 10	...	...	...	60
Food at Rs. 6	...	...	...	36
<i>Extra boat.</i>				
Seven boatmen at Rs. 37 per trip, three trips per mensem, for six months	...	...	...	666
Food for seven men for six months at Rs. 6	...	...	...	252
Total				3,516

The men are engaged all day in collecting and storing the eggs and at night are supposed to go round and guard the island from thieves, who sometimes come over from the mainland.

The boatmen take the eggs to Bassein, making three trips in the season and two in the dry weather every month and being paid by the trip, and carry food for the men to the island.

The cost of two boats is about Rs. 1,500 and they last five to ten years, if properly looked after. Between the island and Bassein about 7 per cent. of the eggs gets either broken or rotten—the former in the north-east monsoon, when the shell hardens; the latter in the south-west monsoon, when the weather is sultry.

In an average year the take is, say, 1,700,000 minus 7 per cent., say, 1,600,000, at Rs. 150 per 10,000, the current price Rs. 24,000, the revenue for a season is Rs. 16,000, expenditure Rs. 3,516, leaving a clear profit of Rs. 4,484. What eggs are not sold in Bassein at Rs. 150 are packed in salt and sent to Rangoon and Prome, the freight being Bassein to Rangoon 12 annas per 1,000 and Rangoon to Prome 14 annas. About 50 viss salt are used for 10,000 eggs.

Cost of freight, salt, &c., are met by the increased price realised in Rangoon and Prome, Rs. 170, Rs. 180, even Rs. 200 and more per 10,000 being sometimes obtained.

The present lessee informs me that his price is more readily and easily obtained in the rains during the Buddhist lent, when offerings to the *pōngyis* frequently take the form of a dish of turtle eggs.

I have based the dates for the payment of revenue on the actual take, the bulk of which is from July to November, 1,250,000 roughly. I have given in paragraph 14 my reasons for suggesting that Rs. 5,000 is sufficient security.

The bank has always been sold in Bassein and should continue to be sold there.

NGANCHAUNG, 5—*Nganchaung circle, Ngaputaw township, Bassein district.*

This bank consists of the whole coast line of the *Nganchaung circle* from *Pagoda Point* to the *Ngapyawchaung*, 27 miles as the crow flies, and possibly more than double that if the coast line is followed, and includes two islands shown on *Fitzroy's* map as *Leat* (known locally as *Pyin*) and *Onkyun*. On the map I submit *Pyin* becomes *buffalos* and *On* becomes *Leat*, alterations for which I cannot account. The lessee himself does nothing on the bank but sublets the whole as follows :—

	Rent. Rs.
(1) Pagoda point to Madawchaung called Kanni	230
(2) Madawchaung to Zichaung called Ondaik	100
(3) Zichaung to Cape Negrais called Zichaung (Akyawgyi)	85
(4) Cape Negrais to Nagadaung (marked on Fitzroy as extinct volcano) called Kin-ngu or Kan-ngu	260
(5) Nagadaung to Kyaukchaung called Helet	220
(6) Kyaukchaung to Paungdochaung called Thedaung	40
(7) Paungdochaung to Thanpanchaung called Paungdo	200
(8) Thanpanchaung to Nganchaung called Pyinbōnchaung	155
(9) Nganchaung to Ngapawchaung including the two islands called Sabagyithaung	40

Kin-ngu is again sublet, a small bay being excluded and sold separately for Rs. 30. The cost of working these various bays and banks is very frequently nothing at all, the purchaser either living in the neighbourhood or erecting a small hut on the bank in September. Eggs are readily sold on the banks towards Pagoda point for Rs. 10 per 1,000 and higher up for Rs. 7 to Rs. 9. They are carried across the hills, each man carrying 1,000, about 60 lbs.

in weight, to the Bassein river, where they sell for Rs. 12-8-0 to Rs. 15 per 1,000 or possibly even more. On the mainland the only turtle that lay are the loggerhead, whereas on the two small islands the green turtle alone lays. To get at the take in these parts is very difficult. The Arakanese working the banks are if possible more untruthful than the Burmans on the south coast. However, one man, I believe of strict probity, a Karen, Maung Nyat Ngo, living at Upa, informed me that he got 55,000 eggs from the Helet bank this year, selling them for Rs. 8 per 1,000. He must have realised Rs. 440, just double his rent. It may therefore be roughly calculated that every rupee of rent means in this part of the country 250 eggs.

Obviously the bank as at present sold is far too large and should be divided as nearly as possible as actually worked. Of the divisions noted above, (1) to (7) are in every way excellent and should be adhered to. Number (9) consists of two islands on which green turtle lay and a short piece of the mainland on which the loggerhead lays. A short distance further north, however, is the island of Onkyungale worth about Rs. 200, known locally as Myauk or North Island. These three islands should be sold as one bank worth about Rs. 240 and the small piece of mainland between the Ngan and Ngapyaw *chaungs* should be given to No. (8) in the above list. It is not worth possibly more than a rupee or so. The three islands should be known as the Kyunthôn-Kyunthaung, the Three Islands bank.

The Subdivisional Officer of Bassein might with advantage sell these banks locally annually at first and in the dry weather; Zichaing would be a convenient place to sell Nos. (1) to (4); Upa or Paungdo villages quite close together, Nos. (5), (6) and (7); and Kwinbet, No. (8) as amended and the three Islands bank. As regards the revenue, it should be payable to the circle thugyi owing to the great distance from the township headquarters on the following dates:—

Nos. (1) to (8)—

					Per cent.
1st July	...	...	...	...	10
1st November	...	...	...	...	40
1st December	...	...	...	...	40

instead of as now 50 per cent. on the full moon of *Tawthalin* and 50 per cent. on the new moon of *Tasaungmôn*. The revenue of the Three Islands' bank should be payable—

					Per cent.
1st July	...	...	...	...	10
1st September	...	...	...	...	20
1st December	...	...	...	...	40
1st February	...	...	...	...	30

The leases of Nos. (1) to (8) should run from 1st September to 1st January and that of the Three Islands from 1st April to 31st March instead of from 1st July as is now the case. This last is a change which needs some explanation. The green turtle lays in larger numbers and more eggs in the rains than at any other time; travelling is difficult and at times impossible on the west coast in the monsoon. Taking these two facts into consideration, it is, I think, obvious that the change of lessees should take place in the dry weather. All general rules should apply. I may note here that the men working these banks are very anxious to be allowed to collect net tax from shrimpers and fishermen. On no consideration should this be allowed.

Security for the revenue of Nos. (1) to (8) should be given in full, less all sums paid in when the leases are for one year only. Security for No. 9, the Three Islands' bank, should be 60 per cent. of the revenue.

6. NGAYOTKAUNG—*Ngayotkaung circle, Ngaputaw township, Bassein district.*

This bank consists of a series of small bays and extends along the entire coast of the Ngayotkaung circle, 15 miles in a straight line. On three islands turtle lay—Onkyun, dealt with under the Nganchaung bank, Koyangyi Island at the mouth of the Ngayotkaung creeks, called on Fitzroy Kawrangyee and now become the Coringhi of mariners, and Thityaung further north. Excluding the Onkyun none of the small bays or islands are of any value. To the south of the Ngayotkaung creek there are five bays sublet for Rs. 116; the largest Rs. 50, the smallest Rs. 10. The Koyangyi island is sublet for Rs. 10. To the north of the Ngayotkaung creek there are seven bays and one Island sublet for Rs. 79; the most valuable for Rs. 40, the least valuable for Rs. 4. On Koyangyi and Thityaung islands the green turtle lays and on the mainland the loggerhead almost exclusively. The number of eggs taken may be calculated roughly as 250 eggs to Re, 1 sub-rent. The eggs of the loggerhead sell locally for Rs. 8 per 1,000 and are taken across the hills. The green turtles' eggs fetch Rs. 10 in the local market, but there are few of them to be had.

The expenses of working the banks are nothing as the sub-tenants have only to walk out of their houses in the morning and dig up the eggs laid the previous night. The two islands, Koyangyi and Thityaung, are of very small value.

No one man can possibly work the bank as now sold. The small bays must be sold locally to the villagers as the distance between them is so great that it would not pay a tenant to hire labour. The best way will be to divide the bank into two parts:—

(13)

- (1) To be called Ngayotkaung south bank from the Ngayôkkaung creek to the Ngapyaw creek, including the Koyangyi Island, but excluding the Ônkyun or Myauk Island, worth about Rs. 126.
- (2) To be called the Ngayotkaung north bank from the Ngayôkkaung creek to the Sinma creek and including the Thityaung Island, worth about Rs. 80.

The revenue should be payable to the circle thugyi on the following dates :—

	Per cent.				
1st July	10
1st November	40
1st December	50

instead of as now. The number of green turtle laying may, I think, be disregarded. The Subdivisional Officer of Bassein should sell the banks annually in January at Ngayotkaung. The leases should run from 1st September to 1st January with a special clause that the leases of the Koyangyi Island and of Thityaung Island should run from 1st April to 31st March. All general rules should be held to apply. Security should be given for the whole of the revenue, less any sum paid in when the banks are sold for one year.

SINMA, 37.—Sinma circle, Thabaung township Bassein district.

This bank consists of the coast line of the Sinma circle from the Sinma creek to the Magyi creek. The bank is a series of small bays and one small Island, Chaungtha, shut in between the mainland. The present lessee works three small bays himself and sublets the rest, larger part of the bank must be sublet. A few green turtle come up now and again, but the bulk of the take is the eggs of the loggerhead. The banks are worked at no cost by the villagers themselves. The take may be calculated at Re. 1 of revenue per 250 eggs. The bank is of course far too large to be worked by one man and must be sublet, but I know of no convenient division. The rent of the whole bank is but Rs. 120. I would suggest that it be sold as now auctioned, but the Subdivisional Officer of Bassein might conduct the auction at Chaungtha yearly in January. The lease should run from 1st September to 1st January and the dates of the payment of the revenue should be—

	Per cent.				
1st July	10
1st November	40
1st December	50

instead of as now, the whole on 1st July. The Sinma thugyi should collect the revenue. All general rules should apply to the bank.

BAWMI, 36.—Bawmi circle, Thabaung township, Bassein district.

This bank consists of the coast line of the Bawmi circle, 25 bays and one island, Tabinhmaw. The former are grouped and sublet for small sums, Re. 1, Rs. 4, 12 and so on. On the mainland the only turtle that lays is the loggerhead, but on the island the hawks-bill turtle, the turtle of commerce, lays. This is the only place in the delta where this species does lay and as it has become very scarce the eggs might be allowed to hatch instead of being taken. The bays are worked by villagers with no outlay. The number of loggerhead eggs may be calculated at 250 per rupee of revenue. The value of the island is, say, Rs. 40, which would give the number of hawks-bill eggs which sell for the same price as the loggerheads laid annually as 10,000. The islands on which the hawks-bill turtle lays, Tabinhmaw, has a rocky foundation and is covered with sand. It is worked from June to September when the turtle are laying. It should be excluded from the bank altogether and the headman within whose jurisdiction the island falls, Thègôn, and the ten-house *gaung* of the nearest village, Taungkadôn, should both be warned that no one may touch the eggs and that they should report any infringement of the order. The Subdivisional Officer might sell the rest of the bank at either Bawmi or Magyi every year. The revenue would be payable to the circle thugyi on the following dates :—

	Per cent.				
1st July	10
1st November	40
1st December	50

instead of as now on the full moon of *Thadingyut* and *Tabodwe* in equal parts. All general rules should be held to apply.

Security for the whole of the revenue should be given, less any sum paid when the bank is sold for only one year. That the turtle referred to above as the hawks-bill are such I have accepted, but have not been able to verify. The lessee, however, in conversation referred to all other kinds and apparently knew what he was talking about, so I have accepted his statement, for which, however, I cannot vouch. Anyhow the amount involved even if a mistake has been made is very small, Rs. 40. It might be well to have one of the turtle killed and the shell brought in.

Serial No.	Name of turtle bank.	No in district register.	Circle.	Township.	District.	Revenue.	PROPOSED DIVISIONS.		Number of men required at one time.	COST OF WORKING.				
							Name.	Value.		Initial.		Later.		Total.
										Material.	Labour.	Material.	Labour.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	To ...	229	Tónmayan ...	Dedayè ...	Thóngwa	Rs. 100	Tónyaung-waing.	Rs. 75	...	...	...	...	...	...
						...	Tawkayin ..	75	...	...	...	...	...	...
2	Thaungka-dun,	223	Pyindayè and Thazi,	Bogale and Pyapón.	do. ...	3,320	Thaungkadun	2,500	7	100	105	...	400	610
			Thazi	Pyapón	Pyapón	...	Upekaladaik ...	175	...	...	...	...	...	...
3	Taikkwet ...	412	Pyindayè ...	Bogale ...	Thóngwa...	685	...	...	1	...	...	...	...	...
4	Kaingthaung	203	Pyindayè ...	do. ...	40	4,060	Kaingthaung...	3,500	7	100	408	75	180	763
						...	Hngetspyawkyun.	700	...	...	...	...	...	...
						...	Kadongale ...	2,000	...	...	...	...	...	...
5	Amatgale ...	456	Labutkyantaung,	Myaungmya	Myaungmya	710	...	...	5	...	85	...	100	135
6	Pyinsalu ...	...	Kwinbauk ...	do. ...	do. ...	600	Seikgyi ...	400	4	...	44	...	132	176
						...	Ywe ...	200	...	...	...	...	...	...
7	Pyinkayaing	4	Pyinkayaing	Ngaputaw ...	Bassein	230	Pyinkayaing ...	80	1	...	...	...	...	...
						...	Kyauklatsun ...	80	1	...	...	...	...	...
						...	Bindawbyit ...	70	1	...	...	...	...	...
8	Haingyi ...	3	Haingyi ...	do. ...	Bassein ...	260	...	...	1	...	...	...	...	...
9	Kabaung-hmaw,	2	do. ...	do. ...	do. ...	20	...	...	1	...	...	...	...	...
10	Diamond Island.	1	Haingyi ...	do. ...	do. ...	16,100	...	...	5+14 boatmen.	60	879	150	2,637	3,716

DIX II.

APPROXIMATE TAKE.				Present dates for payment of revenue.		Proposed date.		General recommendation.
Description.	Quantity.	Value.	Months.	Date.	Per cent.	Date.	Per cent.	
16	17	18	19	20		21		22
Loggerheads ...	7,500	92	September to November.	1-7	50	1-7	10	(1) Should be divided and sold as shown. (2) The leases should run from 1st September to 1st January. (3) The general rules should apply. (4) Security for the whole of the revenue should be given. (5) The Township Officer, Deday, should sell the banks locally and annually in the dry weather.
ditto ...	7,500	92	ditto ...	15-12	25	1-11	40	
ditto ...	150,000	1,687	ditto ...	1-7	20	1-12	50	(1) Should be divided and sold as shown. (2) The lease should run from 1st September to 1st April and of Upèkaladaik from September to 1st January. (3) The general rules should apply. (4) Security for the whole of the revenue should be given. (5) The Township Officer, Deday, should sell the banks locally and annually in the dry weather.
Tortoise ...	50,000	1,750	February ...	15-9	10	1-7	10	
Fishery ...	...	350	March ...	15-10	10	1-12	30	(1) Should be divided and sold as shown. (2) The lease should run from 1st September to 1st April. (3) The general rules should apply. (4) Security for the whole of the revenue should be given. (5) The Subdivisional Officer, Pyapôn, should sell the Thauangkadun and the Township Officer, Pyapôn, the Upèkaladaik locally, annually, and in the dry weather.
Loggerheads ...	Unknown	2,100	September to November.	15-1	30	15-3	60	
Loggerheads ...	5,000	62	September to November.	1-7	20	1-7	10	(1) The Eya nangat should be excluded. (2) The lease should run from 1st September to 1st April. (3) The general rules should apply. (4) Security for the whole of the revenue should be given. (5) The Subdivisional Officer, Pyapôn, or Township Officer, Bogalè, should sell annually, locally, and in the dry weather.
Tortoise ...	5,000	200	February and March.	15-9	10	1-12	20	
Loggerheads ...	800,000	9,000	September to November.	15-10	10	15-3	70	(1) Should be divided and sold as shown. (2) The lease of Kaingthaung and Hngetypyawkyun should run from 1st September to 1st April and of Kadongalè from 1st September to 1st January. (3) The general rules should apply. (4) Security for the whole of the revenue should be given. (5) The Subdivisional Officer, Pyapôn, should sell the banks locally, annually, and in the dry weather.
Tortoise ...	24,000	960	February and March.	15-1	30	1-11	30	
...	...	...	...	15-2	30	1-12	40	(1) The small piece of the mainland known as Pyin nangat, formerly belonging to Kaingthaung, should be added to this bank. (2) The lease should run from 1st September to 1st January. (3) The general rules should be applied at once. (4) Security for the whole of the revenue should be given. (5) The Subdivisional Officer, Wakèma, should sell the bank locally, annually, and in the dry weather.
Loggerheads ...	100,000	1,125	September to November.	1-7	20	1-7	10	
Loggerheads ...	70,000	875	ditto ...	15-9	10	1-11	40	(1) Should be divided and sold as shown. (2) The leases should run from 1st September to 1st January. (3) The general rules should apply. (4) Security for the whole of the revenue should be given. (5) Subdivisional Officer, Myaungmya, should sell the banks annually, locally, and in the dry weather.
Sub-rent ...	...	200	...	15-10	10	1-12	50	
...	...	1,075	...	15-1	30	1-7	10	(1) Should be divided and sold as shown. (2) The leases should run from 1st September to 1st January. (3) General rules should apply. (4) Security for the whole of the revenue should be given. (5) The Township Officer, Ngaputaw, should sell the banks locally, and annually, in the dry weather.
Loggerheads ...	10,000	125	September to November.	15-2	30	1-11	40	
ditto ...	10,000	125	ditto ...	1-7	20	1-12	50	(1) The lease should run from 1st September to 1st January. (2) The general rules should apply. (3) Security for the whole of the revenue should be given. (4) The Township Officer, Ngaputaw, should sell the banks annually, locally, and in the dry weather.
ditto ...	9,000	112	ditto ...	15-11	40	1-7	10	
Loggerheads ...	35,000	397	September to November.	15-12	50	15-11	40	(1) The lease should run from 1st September to 1st January. (2) The general rules should apply. (3) Security for the whole of the revenue should be given. (4) The Township Officer, Ngaputaw, should sell the banks annually, locally, and in the dry weather.
ditto ...	5,000	58	ditto ...	1-7	50	15-12	50	
Green turtle ...	1,000,000	15,000	June to October, November to March and May.	1-7	50	1-7	10	(1) The lease should run from 1st April to 31st March. (2) The general rules should apply. (3) Security for Rs. 5,000 should be given. (4) The Deputy Commissioner, Bassein should sell annually in Bassein in March, or even earlier. (5) The revenue should be payable in Bassein.
	700,000	10,500		1-1	50	1-11	40	
		25,500		1-2	50	1-12	50	

Rs. 500

(17)

DIX II—concluded.

APPROXIMATE TAKE.				Present date for payment of revenue.	Proposed date.		General recommendation.
Description.	Quantity.	Value.	Month.		Date.	Per cent.	
16	17	18	19	20	21	22	
Loggerheads ...	57,000	Rs. 570	September to November.	Full moon of <i>Taw-thalin</i> ; 50 per cent.	1-7 10 1-11 40 1-12 50	<p>(1) Should be divided and sold as shown. (2) The leases of all but the last subdivision should run from 1st September to 1st January and the last from 1st April to 31st March. (3) Security for the whole of the revenue of all but the last should be given and for the last 80 per cent. of the revenue only should be secured. (4) The general rules should apply. (5) The subdivisional officer, Bassein, should sell the banks locally, annually, and in the dry weather.</p>	
ditto ...	25,000	250	ditto ...	Full moon of <i>Tosaungmon</i> ; 50 per cent.	1-7 10 1-11 40 1-12 50		
ditto ...	2,100	210	ditto ...	.....	1-7 10 1-11 40 1-12 50	
ditto ...	65,000	650	ditto ...	.....	1-7 10 1-11 40 1-12 50	
ditto ...	55,000	440	ditto ...	.....	1-7 10 1-11 40 1-12 50	
ditto ...	10,000	80	ditto ...	.....	1-7 10 1-11 40 1-12 50	
ditto ...	50,000	400	ditto ...	.....	1-7 10 1-11 40 1-12 50	
ditto ...	40,000	320	ditto ...	.....	1-7 10 1-11 40 1-12 50	
Green ...	47,000	470	All the year round	.....	1-7 10 1-9 20 1-12 40	
Loggerheads ...	20,000	180	September to November.	20-7	1-2 30 1-7 10 1-11 40 1-12 50		
Green turtle ...	Few.	...	All the year round	.....	1-7 10 1-11 40 1-12 50	
Loggerheads ...	30,000	240	.....	.....	1-7 10 1-11 40 1-12 50
Green turtle ...	Few.	...	All the year round	.....	1-7 10 1-11 40 1-12 50	
Loggerheads ...	30,000	240	September to November.	July; whole ...	1-7 10 1-11 40 1-12 50		
Loggerheads ...	20,000	160	ditto ...	Full moon of <i>Thadingyut</i> ; 50 per cent.	1-7 10 1-11 40 1-12 50		
Hawks-bill ...	10,000	80	June to September.	Full moon of <i>Tadodwe</i> ; 50 per cent.	.....	

APPENDIX III.

Statement showing the revenue of each turtle-bank for the year 1878-79 to 1897-98.

Serial No.	Name of turtle-bank	1240	1241	1242	1243	1244	1245	1246	1247	1248	1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	Total.	Remarks.	
		1878-79	1879-80	1880-81	1881-82	1882-83	1883-84	1884-85	1885-86	1886-87	1887-88	1888-89	1889-90	1890-91	1891-92	1892-93	1893-94	1894-95	1895-96	1896-97	1897-98			
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		
1	Yo ...	50	50	185	185	75	50	50	50	50	50	50	50	135	135	135	135	135	60	100	100	1,830		
2	Thungkadun ...	2,300	1,400	4,000	4,000	3,700	3,000	3,000	3,500	3,500	3,500	3,600	3,600	5,510	4,350	4,250	3,600	2,440	2,500	1,970	3,320	67,040		
3	Eya-Taikkwat ...	70	250	610	150	380	350	685	2,495	Thrown open in 1881-85.
4	Kaingthaung ...	2,000	2,000	4,950	4,630	3,760	3,760	3,760	2,870	2,870	2,870	2,870	2,870	6,830	5,010	4,800	4,600	4,020	3,600	2,760	4,050	74,870	Divided in 1886-86 and again in 1895-96.	
5	Amatg. le ...	...	...	...	...	...	...	...	1,330	1,330	1,330	1,330	1,330	1,700	1,330	1,200	800	710	710	710	710	14,520	Formerly in Kaingthaung.
6	Pyinsalu ...	315	315	250	250	320	405	420	400	400	400	400	400	820	400	425	425	425	425	425	425	8,045		
7	Pyinkayaing ...	210	210	220	100	223	162	175	150	150	150	150	150	260	160	160	160	220	160	(a)	230	3,400		
8	Haingyi ...	410	410	410	150	162	165	350	300	300	300	300	300	300	300	300	450	450	450	(a)	260	6,067		
9	Kabaungmaw ...	190	190	190	160	140	100	80	80	80	80	80	80	80	80	30	40	40	40	(a)	20	1,730		
10	Diamond Island ...	16,500	16,500	16,500	15,900	15,900	15,900	18,000	18,000	18,000	18,000	18,000	13,000	13,000	13,000	13,000	13,000	15,100	15,000	16,100	16,100	3,14,600		
11	Ngangyaung ...	730	730	730	810	1,160	895	1,110	1,100	1,100	1,100	1,020	1,020	1,020	1,200	1,200	1,200	1,050	1,050	1,050	1,050	20,825		
12	Ngayokkaung ...	410	410	250	200	306	325	405	415	340	470	470	470	470	470	225	425	270	270	(a)	200	6,801		
13	Sinma ...	150	150	150	135	190	180	215	180	120	280	160	160	160	100	180	160	160	160	(a)	190	3,170		
14	Bawmi ...	100	100	60	115	120	70	121	100	100	100	100	100	100	115	115	115	125	125	125	125	2,131		
	Total ...	23,435	22,715	28,505	25,785	26,406	25,362	27,686	28,475	28,340	28,630	28,530	23,530	30,385	26,710	26,000	25,110	25,145	24,650	23,280	27,395	5,27,074		

(a) Sold with pearl-banks.

(19)

APPENDIX VII.

RULES.

Proposed conditions to be applied to all turtle-banks and to all licenses issued under the Fishery Act.

1. Fishermen who have taken out or who intend to taken out licenses for the use of *damin* traps or for nets may use any turtle-bank in the Irrawaddy Division and the waters adjacent thereto other than the Thaungkadun, Labaing, Kaingthaung, Hngetpyaw, Kadôngale, Diamond Island, and Kyun-the-kyun, Ngayôkkaung, and Ngangyaung circles, and the water adjacent thereto without payment, provided that—

(a) no net shall be used within 400 fathoms of any bank between sunset and sunrise before the first decrease *Natdaw*, and

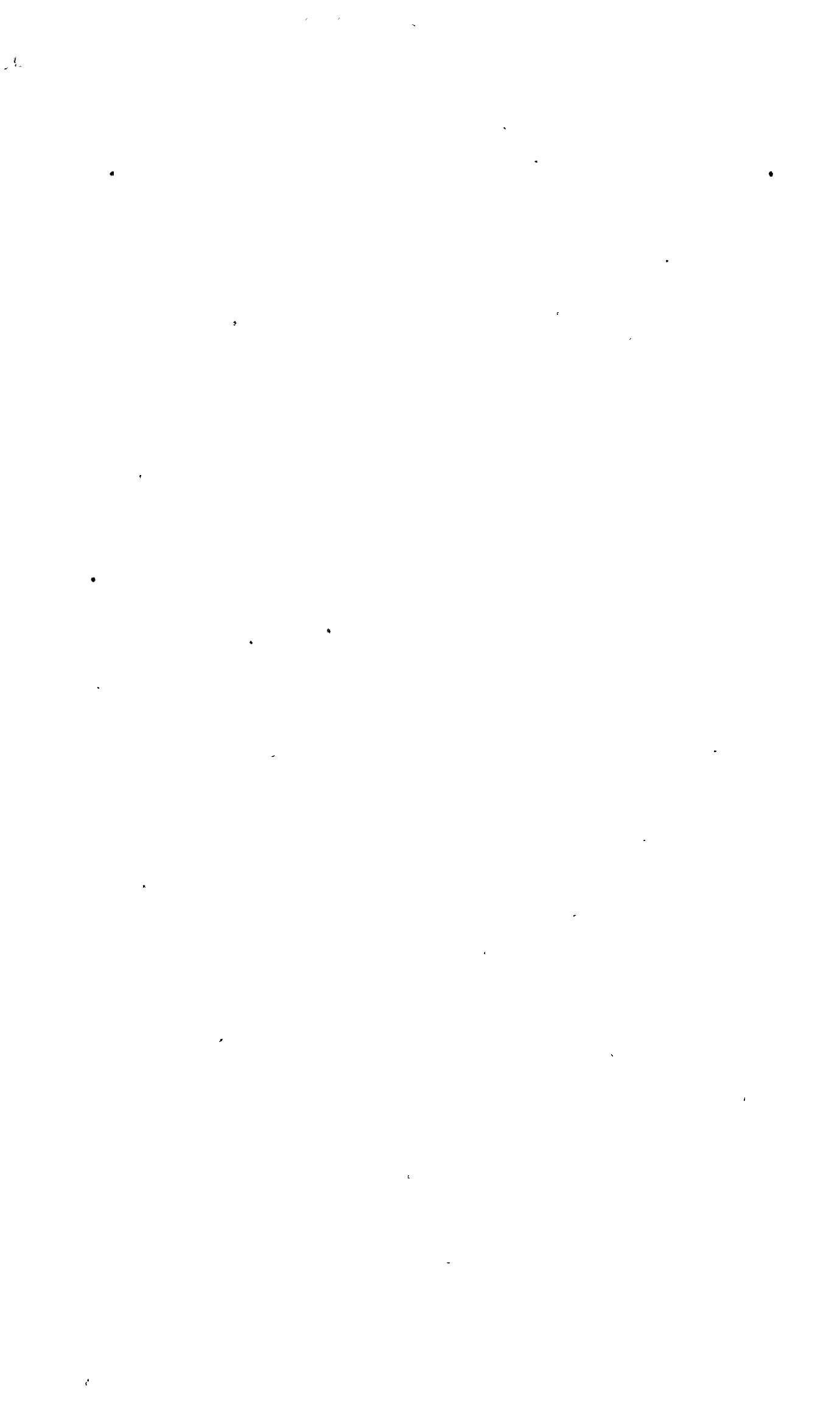
(b) no *damin* trap or net shall be spread out to dry except in some recognized spot near the village or *daminzeik* in which the fisherman is residing.

2. No lessee or sub-lessee of a turtle-bank or any part thereof, and no servant of such lessee or sub-lessee or any other person residing under the same roof as either, shall interfere with cattle grazing on any turtle-bank in the Irrawaddy Division, or make any demand in respect of such grazing, provided that no cattle shall be grazed on Thaungkadun, Labaing, Kaingthaung, Hngetpyaw or Kadôngale between the first decrease *Natdaw* and the time the *nests* of the *Batagur* tortoises are taken.

3. No lessee or sub-lessee or a turtle-bank of any part thereof, and no servant of such lessee or sub-lessee and no person residing under the same roof as either, shall take or permit or suffer any other person to take, open or interfere with, in any way whatever, any nest of eggs laid by the leathery or hawks-bill turtle, and every such person shall to the utmost of his power preserve the nests of all such turtles.

4. No lessee or sub-lessee of a turtle-bank or any part thereof, and no servant of such lessee or sub-lessee and no person residing under the same roof as either, shall kill, capture or in any way interfere with any of the following—

Green turtle.	|	Leathery turtle.
Loggerhead turtle.	|	Hawks-bill turtle.
Batagur tortoises.		



From H. THOMPSON, Esq., Secretary to the Financial Commissioner, Burma, to the Revenue Secretary to the Government of Burma,—No. 105—2F.-3, dated the 6th January 1899.

With reference to paragraph 7 of your letter No. 486—2F.-1, dated the 22nd July 1897, I am directed to submit, in print, Captain Maxwell's report (with Appendices I, II, IV, V, and VI in manuscript) on the turtle-banks of the Irrawaddy division, together with a copy of the Commissioner of Irrawaddy's forwarding letter No. 228—4F.-47, dated the 18th October 1898.

2. The greater part of the report consists of a description of the different turtles and tortoises which visit the coast throughout the Irrawaddy division, with their habits, the periods during which their eggs are deposited, &c. This information should be of great use to District Officers in future. Captain Maxwell's proposals, which are supported by the Commissioner, for the protection of the turtles (including tortoises) and their eggs, and for the improvement of the administration of the turtle-banks are summarized in paragraph 15 of the report. Dealing with the proposals in the order given in the paragraph :

Proposals I and II.—Captain Maxwell recommends that it be ascertained either from the Calcutta Museum or by sending out a small expedition whether the green turtle and the loggerhead are found and lay their eggs in the Cocos, the Preparis, and other bordering islands in the Bay of Bengal, and, if so, that the close season for green turtle (from 1st April to 15th May) should be abolished and green turtles should be allowed to be caught for food on Diamond Island up to a limited number, provided this causes no decrease in the number of turtles.

The Financial Commissioner is unable to see how either Government or the lessee of the island would benefit much if these proposals were accepted. The argument put forward in paragraph 11 of the report is that under natural conditions the number of eggs deposited would be not more than sufficient to reproduce the species, and as the lessee has been taking the greater share of these eggs for a number of years the green turtle must have some other habitat. If not, its numbers would have decreased, whereas, so far as can be ascertained on enquiry, the number has remained almost stationary. Mr. Smeaton can hardly consider such an argument convincing. Looking at the matter from a more practical stand-point, it appears from paragraph 4 of the report that March, April, and May are the months in which fewest eggs are deposited on the island, so that to abolish the close season would be of little or no advantage either to the lessee or to Government. The season was started on the recommendation of Dr. Day and should, the Financial Commissioner thinks, be continued. Again, it is not clear what gain there would be in allowing a certain number of turtles to be killed yearly. They would, of course, have some market value, but it would be difficult, perhaps impossible, to prevent more than the prescribed number being taken, and is a dangerous experiment with no very clear object.

Proposal III.—It is suggested that the islands on which the tortoises lay should be completely protected during the laying season, *i.e.*, from 1st January to 15th May, once every five years (*vide* paragraph 13), and that an establishment costing Rs. 870 should be entertained to protect these islands during this fifth year.

The Financial Commissioner thinks it is clear from paragraph 11 of the report that the number of tortoises is decreasing year by year, and they require some protection. Mr. Smeaton would suggest, however, in order that the supply of eggs may not be entirely cut off every fifth year, that the banks which the tortoises visit be divided into five lots and that the lots be preserved, one a year, in consecutive order. This would answer the purpose of the proposal and would allow a small permanent establishment to be entertained for the season in each year, when the banks would be likely to be better protected.

Proposal IV.—The suggestions for dividing up the banks have been carefully worked out and may be accepted.

Proposal V.—The English dates proposed for payment of instalments as given in Appendix II may be accepted.

In paragraph 14 (pages 27 and 28) the substitution of Burmese for English dates is recommended. This proposal would probably result in considerable

confusion in the revenue office accounts, as the English dates would need to be changed yearly, and the suggestion has little to recommend it. All that is required is to inform the lessee of the Burmese dates corresponding with the English dates on which the instalments fall due. This might be done by a small modification in the form of fishery lease and security bond, so as to require the Burmese dates to be entered in the vernacular copies of the deeds.

Proposal VI.—The recommendations are that the periods of the leases should be as follows:—

- (a) Where the loggerhead alone lays, from 1st September to 1st January.
- (b) Where the tortoise also lays, from 1st September to 1st April.
- (c) Where the green-turtle lays, from 1st April to 31st March.

Suggestions (a) and (b) are made so as to prevent the lessee blackmailing fishermen, jungle-cutters, and others during the months when the turtles or tortoises are not laying. Provided the turtle banks are properly defined, there should be little fear of this and considerable damage might, it would seem, be done to the banks by construction of huts, felling of timber, &c., during the months of the year not included within the lease when no one would be interested in looking after them. The tortoise, which Captain Maxwell finds to be a peculiarly timid animal, might possibly be driven away if the banks had not been left untouched for some months prior to its arrival.

As to (c), the grounds for the proposed change are that fewest turtles are laying in April, and that the change in lessee can be made with greater ease and comfort than in July in the monsoon.

From the figures given in the report and appendices it appears, however, that the number of turtles is very little larger in the beginning of July; and as the lessee must be continually journeying to and fro in all months in order to dispose of eggs, there seems to the Financial Commissioner to be little reason for the change. Mr. Smeaton would suggest that all leases run from 1st July to 30th June as at present.

Proposal VII.—It is not stated under what Act or combination of Acts the rules given in Appendix VII could be enforced. The requirements of Rules 1 and 2 might conveniently be carried out by an amendment of the term "fishery" in the Fisheries Act so as to make it include "turtle banks" by a second amendment, permitting rules to be made for prohibiting persons from entering upon turtle banks; and by the careful delimitations of each bank. In place of Rules 3 and 4 Mr. Smeaton would suggest that the Fisheries Act be amended so as to allow rules to be made under it prohibiting the capture or possession of turtles or tortoises.

Proposal VIII.—The notice which it is proposed to issue at the end of paragraph 13 seems to be *ultra vires*. Unless a "gòk" falls within the descriptions of implements given in Schedule A to the Fishery Rules, or is a fixed obstruction (Schedule B) it may be used free of license. Again, there seems to be no law at present under which a person trapping tortoises can be prosecuted, provided the implement he uses is licensed, if license is necessary.

Proposal IX.—As noted above (Proposal VII), Captain Maxwell's proposals may be accepted.

Proposal X.—The question as to the extent of the security to be required from fishery lessees, which will be considered when the general report on fisheries is submitted, will cover the same ground in the case of lessees of turtle-banks as in the case of lessees of other fisheries. Mr. Smeaton prefers therefore to express no opinion on the matter at present.

Proposal XI.—The proposal is that the Diamond Island revenue should be paid into Bassein, the revenue in the case of all other banks, except those on the west coast at the township headquarters and the revenue for west coast banks to the circle thugyi, who would receive 10 per cent. for commission. The Fisheries Act fixes a maximum limit of 4 per cent. for commission. With this modification the proposals may be accepted.

Proposal XII.—The suggestions for dealing with Diamond Island are given at the end of paragraph 14 on page 29. It seems altogether inadvisable that the Deputy Commissioner and his officers should occupy a large share of their time in

(3)

commercial transactions involving no little risk from damage to eggs, &c., when a lessee of the island must be able to carry out the necessary arrangement much more profitably and satisfactorily.

Proposal XIII.—The suggestion to transfer the Kaingthaung group of islands from Myaungmya to Thòngwa district may be accepted.

Proposal XIV.—The men on Diamond Inland might, as proposed be allowed to possess 6 tolas of opium each.

Proposal XV.—The other recommendations in paragraph 14 and Appendix II are briefly—

- (a) that the lease should be auctioned on the spot by the Subdivisional Officer or Township Officer during the dry months (page 27);
- (b) that the leases should run for one year only (page 27);
- (c) that a lessee should not be allowed to hold more than one bank (page 23);
- (d) certain other minor proposals with reference to particular banks (Appendix II).

These may all be accepted.

3. In addition to the above, Captain Maxwell suggests (paragraphs 6 and 7) that the *hawks-bill* and *leathery* turtles should be rigorously preserved. The latter do not appear to breed in Burma, so that they would be sufficiently protected by the suggested amendment of the Fisheries Act making the catching or possession of a turtle punishable.

The hawks-bill turtle visits a small island off Bawmi circle in the Bassein district every year, depositing some 10,000 eggs between June and September. Nothing would be gained by discontinuing the lease of the bank, which is out of the way, unless arrangements were made for protecting it. The present lessee, presuming that there is one, might perhaps be allowed to take eggs free up to (say) 1st August on his undertaking to see that no eggs are removed by himself or others after that date.

4. I am to suggest that such of the above suggestions as relate to the amendment of the Fisheries Act and Rules should stand over until it has been decided what changes in the law are needed on Captain Maxwell's general report on fisheries. The remaining suggestions might be introduced at one.

From Lieutenant-Colonel G. S. EYRE, Officiating Commissioner of the Irrawaddy Division, to the Secretary to the Financial Commissioner, Burma,—No. 228-4F.—47, dated the 18th October 1898.

I HAVE the honour to submit Captain Maxwell's report on turtle-banks called for in paragraph 7 of Revenue Department letter No. 486-2F.—1, of the 22nd July 1897, from the Revenue Secretary to the Government of Burma, to the Financial Commissioner. Captain Maxwell has written a long and interesting report, which goes fully into all questions connected with the leasing of the turtle-banks.

Paragraph 15th of his report briefly recapitulates his proposals, which I recommend should be adopted.



Extract from the Proceedings of the Government of Burma in the Revenue Department,—No. 2F.-3, dated the 15th March 1899.

READ—

The report on the turtle-banks of the Irrawaddy Division, by Captain F. D. MAXWELL, Deputy Commissioner.

READ also—

Letter No. 105—2F.-4, dated the 6th January 1899, from the Financial Commissioner on the report.

RESOLUTION.—The turtle-banks of Burma extend from the mouth of the To or China Bakir river northwards to the mouth of the Gwa river, the southern boundary of the Sandoway district. A list of the banks showing the revenue derived from them during the past twenty years is appended to the report (Appendix III).

2. The right to collect turtles and tortoises' eggs is sold by auction annually by the Deputy Commissioners within whose districts the banks are situated. The statement shows that the revenue during that period has remained fairly constant, varying from Rs. 23,000 to Rs. 28,000.

3. From the report it appears that there are six species that lay on the turtle-banks :—

(a) Four marine turtles—

- (1) Green turtle,
- (2) Loggerhead,
- (3) Hawks-bill,
- (4) Leathry,

the last two being very rarely met with.

(b) Two estuary tortoises known as—

- (1) *Taikleikbin*,
- (2) *Taikleikset*.

Captain Maxwell estimates the annual take of eggs as follows :—

Green turtles ...	...	...	...	...	2,000,000
Loggerheads ...	...	...	...	...	1,500,000
Tortoises ...	...	...	...	...	70,000

The green turtle lays only on Diamond Island. It lays all the year round, but the greater number of the eggs are laid between July and November. The loggerhead lays chiefly on the islands off the mouths of the Irrawaddy and Dalla rivers, and only during the last four months of the year.

The tortoises lay mainly on the Thauangkadun and Kaingthaung groups of islands (Nos. 2 and 4 in the list appended to the report) from the middle of January to the beginning of March. Captain Maxwell reports that they are then captured in large numbers by the villagers near the banks.

4. In paragraph 11 Captain Maxwell discusses the question whether turtles and tortoises are decreasing. In 1874 the Commissioner, Pegu Division, proposed, in connection with the conservation of turtles, that a close season should be observed. In letter No. 293-116, dated the 16th April 1874, the Chief Commissioner directed that a close season for the collection of turtle eggs should be imposed from the 1st April to the 15th May in each year. This close season is still observed. The conclusion at which Captain Maxwell arrives are that turtles are not decreasing, probably because the real habitat of the turtle is in the Andamans, and only a small percentage visit Burma. As the green turtle is the only species which lays on Diamond Island during the close season the green turtle is, in Captain Maxwell's opinion, the only species which benefits at all by the close season, and as the green turtle does not require protection he proposes that, after consulting, if necessary, the Calcutta Museum authorities, the close season should be abolished and that 150 turtles should be allowed to be taken annually. The Financial Commissioner is not disposed to accept these recommendations, and the Lieutenant-Governor agrees with him that it is inexpedient to accept them.

In regard to loggerheads, Captain Maxwell comes to the conclusion that they are neither increasing nor decreasing and that no measures are necessary for their protection.

As regards tortoises, Captain Maxwell considers that the facts show that they are decreasing rapidly and should be protected. He recommends that the islands on which the tortoises lay should be completely protected from the 1st January to the 15th May (the laying and hatching season) once every five years, and that a small establishment should be entertained once in five years for this purpose. The Financial Commissioner suggests that, in order that the supply of eggs may not be entirely cut off every fifth year, the banks which the tortoises visit should be divided into five lots, one lot being preserved in each year in consecutive order. The Lieutenant-Governor accepts the view that tortoises require protection, and that the entertainment of an establishment in connection therewith is necessary. If, however, one-fifth of the banks is preserved every year as proposed by Mr. Smeaton, the full establishment proposed by Captain Maxwell will not be required. His Honour is doubtful whether Captain Maxwell's proposal should be revised in the manner proposed by the Financial Commissioner. The following objections occur to His Honour:—

- (1) If a watching establishment is employed every year (though only for a part of the year) there will be a tendency to employ the same men every year; they will become well known to the fishermen and there will be a considerable risk of collusion between them and the fishermen. If a watching establishment is entertained only once in five years, this danger is much diminished.
- (2) Captain Maxwell proposes that the Myoòk of Bogalè should visit the banks once a month during the close season. This is, in the Lieutenant-Governor's opinion, a very important part of Captain Maxwell's proposal, but, if the close season occurs every year, a great deal of the Myoòk's time will be absorbed by this particular work. Before deciding therefore on this question, His Honour desires that Captain Maxwell should be consulted on the Financial Commissioner's amendment to his proposal.

5. Captain Maxwell points out (page 21) that a turtle-bank is not a "fishery," and that it will not be illegal for any one to trespass on the fishery in spite of its being forbidden. His view of the law appears to be correct, and the law will be amended at the first opportunity. His Honour does not, however, think this need deter Government. It is impossible that any difficulty will arise. Captain Maxwell also proposes (pages 21 and 22) measures for checking the capture of tortoises. His Honour agrees with the Financial Commissioner's remarks on this point. It seems clear that, if the tortoises are to be protected, it will be necessary to amend the Fishery Act, possibly (as Captain Maxwell suggests) by reserving absolutely certain species.

6. In paragraph 14 Captain Maxwell makes certain suggestions for dividing up the banks (Proposal IV) and for dates of payment of instalments of rent due (Proposal IV). The Financial Commissioner agrees to these proposals and the Lieutenant-Governor accepts them. Appendix II of the report, which contains information which should be useful to the District Officers, forms an annexure to the printed report. His Honour suggests that the respective Deputy Commissioners should do for the fishermen of Myaungmya and Bassein what the *Inkunwun* of Thongwa has done for Thongwa (page 27 of report), *i.e.*, have a memorandum printed informing present lessors of the Burmese dates on which their revenue has to be paid. His Honour agrees with the Financial Commissioner that it is unnecessary to substitute Burmese dates for English ones for the date of payment of instalments. The equivalent Burmese dates can be entered in the lease as it is at present done in the case of fixed obstructions (paragraph 3 of Financial Commissioner's Circular No. 3 of 1897, page 213 of the Land Revenue Manual). As regards Proposal VI in connection with the period of the leases the Lieutenant-Governor agrees with the Financial Commissioner that all leases should run from the 1st July to the 30th June.

(3)

Proposal VII (page 24).—Captain Maxwell proposes some general rules which he recommends should be applied to all banks. As pointed out by the Financial Commissioner, it will be necessary to amend the Fishery Act before the rules can be enforced. Rule 1 could not be enforced without amendment of the law. Rule 2 (except the proviso) and Rules 3 and 4 could be made conditions of leases and could be enforced as such. The proviso to Rule 2 could not be enforced by penalties, but an executive order would probably suffice to ensure that it was observed. In paragraph 4 of his letter the Financial Commissioner proposes that the proposed amendments should be deferred until it has been decided what changes are needed on Captain Maxwell's general report. His Honour does not think that the fishery legislation should be dealt with piece-meal. Captain Maxwell should be asked to forward a draft of the amendments which he advises in the Fisheries Act, and rules on the subject of turtles and tortoises and also for a draft of a form of lease which he considers suitable for turtle-banks.

The consideration of Proposal X (page 25), which deals with the question of the extent of the security to be required from fishery lessees, may, as proposed by the Financial Commissioner, be deferred until the whole question is ripe for decision after the general report has been received.

7. *Proposal XI*, regarding the payment of revenue and commission on collections, is embodied in Appendix I, which contains the notes on the various banks. Captain Maxwell's recommendations are summarized by the Financial Commissioner, and the Lieutenant-Governor accepts them subject to the modifications suggested by the Financial Commissioner.

8. *Proposal XII (page 28).*—The Lieutenant-Governor agrees with the Financial Commissioner that it is unnecessary to consider the question of dealing with Diamond Island as suggested by Captain Maxwell.

9. *Proposal XIII.*—Captain Maxwell proposes that the Kaingthaung group of islands should be transferred to the Thongwa district. The reasons given are not, in the Lieutenant-Governor's opinion, very strong. The Deputy Commissioner states (Appendix I) "the islands are geographically and for all purposes "strictly speaking part of the Myaungmya district," and the reason given for transferring them to Thongwa is that they are usually worked for Thongwa. This is not, His Honour considers, a sufficient reason for altering the district boundaries.

10. *Proposal XIV.*—The proposal to allow the men on Diamond Island to possess 6 tolas of opium each is approved. His Honour authorizes the issue of special licenses, free of fee, under Rule 25.

11. *Proposal XV.*—The recommendations summarized by the Financial Commissioner under this head are accepted.

12. Appendix I, which contains much information of permanent interest, has been printed and appended to the report.

13. The acknowledgments of Government are due to Captain Maxwell for his interesting report, which is evidently the result of much thought and labour.

By order of the Lieutenant-Governor of Burma,

H. M. S. MATHEWS,
Officiating Revenue Secretary.