be used in its less worn sections for passing places.

By September, the road was nearly finished, but maintenance of the completed section was so abnormally heavy that it was decided to waterproof the surface with bitumen. In view of the probable future operations, this was eventually not done.

Between July and November, therefore, no major road work was done in Arakan other than the widening of the coast road, and the bulk of the engineers were employed in maintenance. 22,000 local labourers, excluding military supervisors, were employed.

177. *Imphal Front.* Before the Japanese offensive in March caused a stoppage of work, the following all weather two-way roads were being built:—

Imphal – Tiddim.
Palel – Tamu.
Tamu – Witok – Mau.

178. *Imphal – Tiddim* (164 *miles*). It was originally intended to improve this road to an all-weather standard and as we advanced much work was done on it.

By September, half the distance had been finished, but the difficulties in maintaining an all-weather standard were out of proportion to the value of the road. I, therefore, decided to concentrate all road building resources in labour and material on the Tamu – Witok – Kalewa route to the Chindwin; though some had to be left to maintain the Tiddim road at a standard adequate to support the force on that line.

179. *Palel – Tamu* (43 *miles*). As soon as operations permitted, the construction of this road to a two-way, all-weather Class 30 standard was restarted and it was hoped to finish it by the end of the year. This was later altered to Class 70 to permit of the passage of loaded tank-transporters, and the date of completion was extended to April 1945. By November 1944, satisfactory progress had been made, 2,500 military and 2,000 local labour being employed.

180. *Tamu – Witok – Kalewa* (112 *miles*). Planned before March as a two-way, all-weather road from Tamu to Witok, this road was subsequently extended to be two-way, fair-weather Class 70 to Kalewa.

The road was virtually finished by November. An all-weather Class 70 road from Tamu to Kalewa on a different alignment was also planned, but by November reconnaissance only had been made.

181. *The "Breach Road" (Bongaigaon – Pandu).* The Bongaigaon – Amingaon railway has been cut during the monsoon every year except one during the past thirty-two years, and communications in Assam have been interrupted for many months on each occasion.

To provide an alternative route for traffic it was decided to improve to two-way, all-weather standard the road from Bongaigaon to Jogighopa (21 miles) on the north bank of the Brahmaputra River and from Goalpara on the south bank to Pandu (93 miles).

These roads, which were virtually finished by November, should provide a good alternative route if the railway should be breached in future.

182. *Road Construction.* In planning all-weather roads in forward areas the problem has been their construction during the monsoon at a sufficient rate to ensure the adequate support of operations and their subsequent maintenance.

"Bithess", a bitumen-impregnated sheet of heavy jute sacking which was used to cover airfields and prevent penetration of water into the ground, is now being used on roads. It provides an all-weather surface suitable for all but tracked vehicles and can be laid at a rate double that of metalling and tarring road surfaces.

The Engineering Effort. B. *Airfields.*

183. Few new airfields have been built, but the demands for the expansion of existing airfields, and their conversion for use by heavier types of aircraft, strained my engineer resources to the utmost, in spite of the arrival of new mechanical equipment.

The principal changes have been:—

Cox's Bazaar. Enlarged to accommodate an additional heavy bomber squadron and a fighter squadron.

Chittagong. Enlarged to take two heavy bomber squadrons, a U.S.A.A.F. Lightning squadron, a R.A.F. Wing and an Air Staging Post.

Hathazari. Some twenty miles north of Chittagong. Constructed for one transport squadron.

Fenny. Doubled in size to accept four U.S.A.A.F. Medium Bomber squadrons and one long-range Fighter squadron.

Shamshernagar. Fifty miles south of Syhlhet, previously known as Tilagaon. Completely re-designed from a bomber base to an Air Transport and Air Service Centre. The U.S.A.A.F. lent me an airborne aviation engineer company and a group of engineers to help in building this airfield. Their assistance was valuable and the co-operation between the American, British and Indian engineer units engaged, exemplary. I have mentioned this project in some detail because, not only is it the largest airfield in India, but it was the model of the new airfields which we subsequently built.

Sylhet, was expanded for the U.S.A.A.F. from a two squadron Heavy Bomber to a four squadron Transport field.

Tulihal, near Imphal, has been enlarged from a fair-weather Fighter to an all-weather four squadron Transport field. Constructed entirely with "Bithess", it is now regarded as the best airfield in the Fourteenth Army area.

I have referred only to major construction in the rear areas. There was, of course, much other less important work, and work on maintenance during the monsoon was heavy.

184. The construction of forward airfields continued in co-operation with Headquarters, Third Tactical Air Force. An important fact which saved much work was our ascendancy in the air. Dispersal areas were no longer needed and this reduced the mileage of taxi tracks and roads, labour and material.

185. *Airfields in North-East Assam.* Much work was still done on the numerous airfields built for the U.S.A.A.F. in