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Indian Airways Magazine

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MONTHLY

Barrackpore—Calcutta's Second Airport

From this month Calcutta will have another airport to cope with the growing traffic. Of late it has been found impossible for the Dum Dum airport to attend to the heavy volume of traffic arising out of several factors. This decision was announced by the Communications Ministry last month. It need hardly be emphasized the importance of another airport like Barrackpore which is most eminently suited. When the De Havilland Jets are put on service by BOAC on their London—Australia service, Dum Dum becomes a most important and busy one among international airports.

The number of flights at Dum Dum has increased from 74 a day in September 1949 to 230 a day in March this year which is roughly 73 per cent more than the traffic at London airport. Further, with the coming of the monsoon, when instrument flight conditions will prevail, it will be unsafe to rely upon Dum Dum alone. Hence, it is essential that there should be an alternate airport apart from the increased traffic at Dum Dum.

The Standing Finance Committee of the Government of India approved schemes costing Rs. 6,50,000 non-recurring and Rs. 2,00,000 recurring for greater civil aviation facilities. The proposed runway will cost approximately Rs. 3,35,000 and the commission of the airfield will enable the authorities to divert at least a third of the traffic now handled by the Dum Dum airport. In this connexion, it may be recalled to our readers' mind that the Barrackpore aerodrome was developed during the World War II and used chiefly for the airlift to China. It was handed back to the Bengal Flying Club two years ago.

It appears that with the renewal of runway at Barrackpore some of the non-schedule airlines whose offices are not registered in Calcutta will be moved to Barrackpore and they would be required to operate all non-schedule operations from this new airport only. We have every reason to believe that this new airport will be one of the important airports in India within not-too-distant future date.

We understand that it has been decided by the Board of Directors of the Hindusthan Aircraft Factory to take up immediately large-scale assembly and later manufacture of modern and advanced types of military aircraft. Arrangements have been concluded with a foreign firm. The Capital of the factory will be increased by Rs. 1 crore to Rs. 2.75 crores. Whether this is to be raised by a State loan has been left to the Government of India.

(Continued on page 406 bottom)

Aviation News

232

Prentice Plane Assembled in India

The first step in the construction of service aircraft was taken by India recently when the Hindusthan Aircraft Factory at Bangalore assembled the first Prentice trainer aircraft. The aircraft has been successfully test-flown and the IAF pilots have flown same to Ambala to the Air Force Academy for further tests. The assemblage of the Prentice in India sets up the essential preliminary stage in gaining sufficient experience in the manufacture of all components from raw material and build the complete aircraft. Prentice originally designed and manufactured by the Percival Aircraft Ltd. is a modern basic flying trainer. It is expected that this will replace the Tiger Moth now used by the IAF for giving basic training to its student-pilots.

Lower Air Fares in India Urged

While replying to the questionnaire issued by the Air Transport Enquiry Committee the Southern India Chamber of Commerce, Madras, urged the Government of India to reduce the air transport rate. The Chamber said that passenger and freight rates were reasonably low but since the average Indian was poorer than the average citizen of other countries, it would be necessary to lower fares still further to encourage people to use air transport to a greater extent. Such a reduction in the fares would lead to a corresponding increase in the traffic.

Precautionary Ban at Jeddah Airport

It is understood that the Government of Pakistan has sent a note to Saudi Arabia informally protesting against the banning of aircraft carrying Haj pilgrims from Pakistan and India landing at Jeddah airport. The ban, said to have been imposed as a precautionary measure against the outbreak of cholera during the Haj season, has stranded some hundred and seventy intending pilgrims whose passage has been booked by special flights by Orient Airways and Crescent Air Transport.

Pakistan's Ministry of Foreign Affairs is understood to have informed the Saudi Arabian Government that their action was in contravention of international rules and regulations, because all intending pilgrims would be in possession of duplicate health certificates. Meanwhile the Saudi Arabian Legation has assured Pakistan's Foreign Office that the ban would be lifted soon as King Ibn Saud was taking keen and personal interest in the matter.

National Air Race Dispute.— Enquiry Committee's Award

The Committee of the Aero Club of India which has been set up to enquire into the complaints by Major General Misri Chand against the result of the National Air Race, held at Barrackpore in February last, has recommended that Miss Mathur be adjudged first in the race with Messrs. Peck and Pujji, second and third respectively. According to the results announced after the completion of the race Miss Mathur was declared winner with Mr. Pujji and Mr. Bose as second and third. The findings of the Committee have been accepted by the Aero Club. This Committee with Pandit H. N. Kunzru as Chairman and Mr. T. P. Bhalla, Director General of Civil Aviation and Air Vice Marshal S. Mukherjee, as members was asked to enquire into the complaints of Major General Misri Chand, who was competitor in the race and who alleged that the race was not run on a fair basis and claimed that he had won the race. The Committee after examining the relevant documents expressed the opinion that the action taken by the organisers of the National Air Rally was in good faith and there was no evidence of any *malafides* behind the modifications made in the result.

Recommending the race results as above the Committee suggested that to avoid any financial hardships to the competitors, cash prizes awarded should not be withdrawn. They also recommended

that in future the results of such a race should be obtained by strict adherence to the rules laid down. "This would not be done in the present case and for various reasons, therefore, this year's results should not go down in the records of the National Air Race."

Training Glider Pilots in India

In appreciation of interest taken by the Communications Ministry of the Government of India to revive gliding in the country the Indian Gliding Association named the first two-seater glider imported from the U.K. for training purposes "Kidwai." The second due to arrive in Bombay will be named "Khurshiddal." The Association has already named its one-seater Olympia Glider "Jawahar" after the Prime Minister.

The first two seater Glider was successfully test flown at the Fersinji Glider-drome by Mr. F. H. Irani, Chief Pilot Instructor of the Association and was found suitable to Indian conditions. To popularise gliding among the youth of the country the Indian Gliding Association proposes to organise joy-rides for students of schools and colleges in the State of Bombay at the end of monsoon.

The Government of India, it is learnt, proposes to train 59 Gliding Instructors shortly.

Fourth Session of World Civil Aviation Organisation

The International Civil Aviation Organisation's Assembly has completed its fourth session after approving a budget of three million dollars for 1951. The budget called for 2,600,000 dollars to be obtained by assessment from the 58-member nations; 1,32,000 dollars by appropriation from its working capital fund, 80,000 dollars by appropriation from the general fund reserve and 1,88,000 dollars by income from casual revenue.

The assembly decided to hold the next full scale session in three years with small-scale assemblies in the immediate years.

Britain's Latest Jet Fighter

Britain's latest jet fighter, the Hawker 1081, has successfully completed its initial trials a spokesman of the Hawker Company stated recently. The machine, with swept-back wings, is powered by a Rolls-Royce engine and it is believed to be capable of speeds considerably higher than 600 miles an hour.

Joint Operation of Air Ceylon

The Ceylon Government and Australian National Airways have agreed on all important issues for the joint operation of Air Ceylon—Ceylon's National Airline.

Ceylon will provide 51 per cent of the corporation's capital and Australian National Airways the remainder. It is proposed to review the agreement after 10 years. To begin with, the corporation's senior officials will be Australians, but they will gradually be replaced by Ceylonese.

Jet Reconnaissance Aircraft in U. S.

The United States has now put into production a development of the Tornado B-45 jet-bomber specially adapted for photographic missions and for night reconnaissance.

It is called the RB 45-C and will have a speed of something like 550 miles an hour and maximum gross take-off weight of 1,10,000 lbs., a service ceiling of 40,000 feet and a normal tactical range of 1,200 miles with the use of auxiliary wing-tip tanks. Range can be increased by fitting extra fuel tanks in the bomb bays.

The aircraft will have five camera stations and will carry a crew of three. All three air forces of the Strategic Air Command are being equipped with reconnaissance squadrons.

First Internal Airline for Japan since 1945

The Allied Supreme Commander in Japan recently authorised the establishment of an Allied-controlled airline in Japan which will also serve the Japanese

—the first internal air service permitted there since the Japanese surrender. It may be operated by one group of all the seven international airlines operating into Japan before January 1, 1951, and Japanese ground staff will handle the aircraft. It is believed that trunk routes will be established between Tokyo and Fukuoka in Kyushu and Tokyo and Sapporo in Hokkaido, with intermediate stops. Probably a shuttle service will be operated on the busy Osaka-Tokyo line.

Aerial Photographic Survey in India

The technique of aerial photographic survey in India has been developed to such an extent that it will be soon the best in Asia. Aeroplanes, cameras, films and other survey apparatus have been enormously improved. New apparatus has been evolved and entirely new scientific methods adopted for compiling maps from air photographs. The Government of India are understood to be setting up modern photogrammetric equipment to enable the speeding up of their survey work on agriculture, engineering, scientific economic development and town planning. The equipment will be installed at Calcutta, Dehra Dun and Bangalore.

The Government of India's survey work has been at present undertaken by the Air Survey Company of India. This Company set-up in India in 1927 is associated with the Air Survey Company of London and its headquarters situated at Dum Dum, about ten miles away from Calcutta, continued in full operation throughout the last World War. The Air Survey Company of India which has been entrusted with the survey work has guaranteed a minimum of about 30,000 square miles aerial survey and photograph. Bombay is expected to be aerially photographed by the Company shortly after the monsoon.

R. A. F. Display at Farnborough—New Types of Jet Planes take Part

New and still semi-secret jet type planes were among the 420 planes which took part in a Royal Airforce display which

was held at Farnborough on July 7, 1950. Over one lakh people including the King, Queen and Foreign diplomats watched the display. The R. A. F.'s pilots used the Vampire and Meteor jets for mass-formation high speed aerobatics. In the display were 1000 aircrew and 5000 ground staff.

The types on show were: The Hawker P-1081, with squared swept-back wings to stand the power of its Rolls-Royce Nene jet motor. The English electric Canberra jet bomber, with Rolls-Royce Avon engines, Vickers Armstrong experimental type 510, the Venom fighter bomber, De Havilland ghost jet, the Newest British night-fighter and the Meteor NF-11, a development of the earlier jet type with a performance not yet disclosed.

Air Transport Council meets in Melbourne

Delegations from the United Kingdom, Canada, Australia, New Zealand and Fiji and the Western Pacific High Commission attended the fourth meeting of the South Pacific Air Transport Council which was held in Melbourne in May last. They were welcomed by the Australian Minister of Civil Aviation, the Hon. T. W. White, M. P. who headed the Australian delegation.

Mr. White said that since the formation of the Council, great developments had occurred. The Trans-Pacific services of the B. C. P. A. and C. P. A. which was in full operation had produced problems in policy and the technical field and it was for their solution the Council was again meeting. The Council formed three committees to deal with the agenda, viz: Policy Committee, Technical Committee and the Finance Committee.

The first business of the Policy Committee was to review the Pool Account in relation to the Provision of facilities for trunk air services in the South Pacific. The possibility of utilising Tonga as the alternate for the international airport at Fiji was also discussed. The Technical

World's Navigational Aids to Flying "Outdated"

By E. V. E. NEILL

Navigational aids to flying are generally outdated and the problem of effecting improvements is dependent upon some form of world standardisation, according to Mr. R. M. Badenach, B. Sc., M. I. E. Aust., of the Australian Department of Civil Aviation.

In a lecture recently delivered before the Institute of Radio Engineers' convention, Melbourne, Mr. Badenach said that the basic navigational aids at the present time throughout the world were four-course radio ranges and medium-frequency homers. "Many direction-finding stations are still in existence but in many areas they are fast disappearing except those operating on very high frequencies," Mr. Badenach said.

"In the field of long distance aids, it is surprising to see the extent of world coverage achieved by Loran but it is not worthy that there are still strong exponents in Western Europe for the continuous use of Consol and Decca."

"Generally this present world picture is not very satisfactory. To a large extent dependence is still being placed upon systems which are 25 to 30 years old."

"The problem of effecting improvements is dependent upon some form of world standardisation and after some four years of discussion certain plans have been agreed and promulgated by the International Civil Aviation Organisation as Annex 10 to the International Civil Aviation Convention. This Annex stipulates to standards, i. e., an Instrument Landing System employing a Localiser and a Glide Path, and a V. H. F. Omni-Range. The use of G. C. A. was recommended in certain circumstances and, at the same time a tentative specification was issued for a Distance Measuring Equipment

(D. M. E.). It is being realised that this facility of measuring distance is most important in navigation. Nobody claims that these aids are the final answer but they are the best which the world has to offer at the present time. They provide track guidance, permit of a positive fix being obtained, and give assistance to landing in low ceiling conditions. They provide the answer to a problem which existed more than ten years ago—further evidence of the said lag between known requirements on the one hand and their solution on the other.

"Not a great deal of knowledge could be assembled in regard to what the world is doing as the result of the issue of Annex 10. A tremendous programme of development is under way in the United States where construction programmes provide for the provision of 322 Instrument Landing Systems, 729 Distance Measuring Equipments, some 82 G. C. A.'s and 409 V. O. R. Ranges. In Australia we already have 30 V. A. R. Ranges and plans are well advanced for doubling the coverage provided by this system. Contracts have been let for the installation of 89 Distance Measuring Equipments and tenders are being considered for the provision of 13 Instrument Landing Systems. Probably also need exists for at least two G. C. A.'s

"In the United Kingdom a most striking development is the decision to operate civil aircraft on an airways basis, the airways initially being defined by the installation of six Medium Frequency Radio Ranges. This is a most significant development achieved as the result of a complete appreciation of the necessity of having a system of most positive control for regulating air traffic. In the next ten or fifteen years there does not seem to be need to be

Ethiopian Air Lines Inc., Addis—Ababa

Bombay—Nairobi				
Tue.—0715	Dep.	Nairobi	Arr.	1535—Mon.
1135	Arr.	Addis—Ababa	Dep.	1115
1230	Dep.	Addis—Ababa	Arr.	1705—Sun.
1540	Arr.	Aden	Dep.	1400
Wed.—0300	Dep.	Aden	Arr.	1330
1700	Arr.	Karachi	Dep.	0430
1800	Dep.	Karachi	Arr.	0330
2130	Arr.	Bombay	Dep.	0001

Fare & Freight Schedule													
Sector		Single			Return			Excess Baggage			Freight		
		Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.	Rs.	As.	P.
Bombay	Nairobi	1107	0	0	1922	0	0	11	1	0	7	1	0
Bombay	Addis-Ababa	900	0	0	1620	0	0	9	0	0	8	0	0
Bombay	Aden	700	0	0	1260	0	0	7	0	0	5	3	0

K. L. M. Royal Dutch Airlines

AMSTERDAM—CALCUTTA—BATAVIA

Aircraft: Constellation

		KL831	KL829	KL827	KL825	KL823
		Sat.	Fri.	Thu.	Wed.	Tue.
Amsterdam	Dep.	19.00	19.00	20.00	20.30	21.00
Munich	Arr.	↓	21.05	↓	↓	↓
Munich	Dep.	↓	22.15	↓	↓	↓
Rome	Arr.	22.35	Sat.	23.35	Thu.	Wed.
Rome	Dep.	00.15	↓	01.15	↓	↓
Cairo	Arr.	06.35	05.55	↓	05.30	06.00
Cairo	Dep.	09.00	08.30	↓	08.00	08.30
Damascus	Arr.	↓	↓	08.05	↓	↓
Damascus	Dep.	↓	↓	10.00	↓	↓
Baghdad	Arr.	↓	↓	↓	12.35	↓
Baghdad	Dep.	↓	↓	↓	14.00	↓
Basra	Arr.	14.15	↓	14.10	↓	13.45
Basra	Dep.	15.45	↓	15.45	↓	15.15
Dahran	Arr.	↓	15.30	↓	↓	↓
Dahran	Dep.	Mon.	17.00	Sat.	23.30	23.35
Karachi	Arr.	00.05	23.20	00.05	Fri.	Thu.
Karachi	Dep.	03.00	Sun.	03.00	08.35	03.00
Calcutta	Arr.	08.35	03.00	08.35	10.00	08.35
Calcutta	Dep.	10.00	08.35	10.00	15.50	10.00
Bangkok	Arr.	15.50	15.50	15.50	Sat.	15.50
Bangkok	Dep.	Tue.	Mon.	Sun.	05.00	Fri.
Singapore	Arr.	05.00	05.00	05.00	↓	05.00
Singapore	Dep.	09.15	↓	09.15	↓	↓
Djakarta	Arr.	10.45	↓	10.45	↓	↓
Djakarta	Dep.	13.50	12.00	13.50	12.00	12.00

BATAVIA—CALCUTTA—AMSTERDAM

		KL 822	KL 830	KL 832	KL 828	KL 824
		Mon.	Sat.	Sun.	Fri.	Tue.
Djakarta	Dep.	04.00	04.00	04.00	04.00	04.00
Singapore	Arr.	↓	↓	06.00	06.00	↓
Singapore	Dep.	↓	↓	07.30	07.30	↓
Bangkok	Arr.	09.00	09.00	10.05	10.45	09.00
Bangkok	Dep.	10.30	10.30	12.15	12.15	10.30
Calcutta	Arr.	13.20	13.20	15.05	15.05	13.20

(Continued on next page bottom)

BATAVIA—CALCUTTA—AMSTERDAM (contd.)

		KL822	KL830	KL832	KL828	KL824
		Mon.	Sat.	Sun.	Fri.	Tue.
Calcutta	dep.	14.45	14.45	16.30	16.30	14.45
Karachi	arr.	20.20	20.20	22.05	22.05	20.30
		Mon.		Mon.	Sat.	
Karachi	dep.	23.15	23.15	10.15	01.15	23.15
		Tue.	Sun.			Wed.
Dahran	arr.	02.35		↓	↓	↓
Dahran	dep.	04.00				↓
Basrah	arr.		02.35	04.35	04.35	↓
Basrah	dep.		04.00	06.00	06.00	
Baghdad	arr.	↓	↓	↓	↓	03.45
Baghdad	dep.					05.15
Damascus	arr.		↓	08.25	↓	
Damascus	dep.			10.00	↓	
Cairo	arr.	07.30	07.30	↓	09.30	↓
Cairo	dep.	09.45	09.45	↓	11.30	
Rome	arr.	↓	14.40	15.35	↓	12.45
Rome	dep.		16.00	17.00	↓	14.00
Munich	arr.	15.55				
Munich	dep.	17.15				
Amsterdam	arr.	19.25	19.40	20.40	19.30	17.40
		Tue.	Sun.	Mon.	Sat.	Wed.

Pan American World Airways

West Bound (from San Francisco)

		Flight Number: PA 1	PA 3	PA 805	PA 7/825
		Fri.	Tue.	Sat.	Sat.
Seattle	Dep.	...	...	...	22 : 55
San Francisco	Dep.	18 : 15	18 : 15	18 : 15	↓
Los Angeles	Arr.	20 : 15	20 : 15	20 : 15	
Los Angeles	Dep.	21 : 45	21 : 45	21 : 45	↓
		Sat.	Wed.	Sun.	Sun.
Honolulu	Arr.	5 : 30	5 : 30	5 : 30	7 : 15
				↓	
Honolulu	Dep.	10 : 00	12 : 30	↓	12 : 30
(International Date Line)		Sun.	Thur.		Mon.
Wake Island	Arr.	16 : 30	19 : 00	...	19 : 00
Wake Island	Dep.	18 : 00	20 : 30	...	20 : 30
		↓	Fri.		Tue.
Guam Island	Arr.		0 : 15	...	0 : 15
Guam Island	Dep.		1 : 45	...	1 : 45
Tokyo	Arr.	23 : 00	↓	...	↓
		Mon.			6 : 00
Tokyo	Dep.	1 : 30		...	PA 7
Okinawa	Arr.	7 : 00		...	8 : 30
Okinawa	Dep.	8 : 15		...	12 : 30
Manila	Arr.	↓	6 : 00	...	Wed.
					14 : 15
Manila	Dep.	↓	8 : 30	...	17 : 30
Hong Kong	Arr.	13 : 00	12 : 30	...	18 : 45
					21 : 35
Hong Kong	Dep.	14 : 15	14 : 15	...	
Bangkok	Arr.	17 : 30	17 : 30	...	
Bangkok	Dep.	18 : 45	18 : 45	...	
Calcutta	Arr.	21 : 35	21 : 35	...	

West Bound (from Calcutta)

Flight Number

		PA 1	PA 7	PA 3	PA 801
		Mon.	Sat.	Thur.	From
Calcutta	dep.	22 : 30	22 : 30	22.30	Bangkok
Delhi	arr.	1 : 50	1 : 50		1 : 50
Delhi	dep.	2 : 35	2 : 35		2 : 35
Karachi	arr.	5 : 35	5 : 35		5 : 35
Karachi	dep.	6 : 30	6 : 30		6 : 30
Basra	arr.	9 : 00	↓		↓
Basra	dep.	9 : 45			
Beirut	arr.	12 : 10	11 : 10		11 : 10
Beirut	dep.	13 : 25	12 : 10		12 : 10
Istanbul	arr.	16 : 30			15 : 15
Istanbul	dep.	17 : 15			16 : 15
Munich	arr.	↓			20 : 15
Munich	dep.	↓			21 : 00
		↓			↓
Brussels	arr.	22 : 50	20 : 15		
Brussels	dep.	23 : 35	21 : 00		
London	arr.	23 : 59	21 : 25		23 : 00
		Wed.			
London	dep.	1 : 00	23 : 59		23 : 59
			Sun.		Fri.
Shannon Airport	arr.	3 : 05	2 : 05		2 : 05
Shannon "	dep.	3 : 50	2 : 50		2 : 50
Gander	arr.	9 : 35	8 : 35		8 : 35
Gander	dep.	10 : 20	9 : 20		9 : 20
Boston	arr.	13 : 10	12 : 10		12 : 10
Boston	dep.	13 : 55	12 : 55		12 : 55
New York (La Guardia)	arr.	15 : 10	14 : 10		14 : 10

Philippine Air Lines Inc.

West Bound—Read Down

East Bound—Read Up

Flight No. 501

Flight No. 500

	L. S. T.		L. S. T.
Saturday	09.30	De. Manila, Philippines	Ar. Friday 13.30
"	16.00	Ar. Calcutta, India	De. " 02.15
"	17.30	De. Calcutta, India	Ar. " 00.45
"	23.30	Ar. Karachi, Pakistan	De. Thursday 19.15
Sunday	01.00	De. Karachi, Pakistan	Ar. " 17.45
"	05.30	Ar. Lydda, Israel	De. " 06.45
"	07.00	De. Lydda, Israel	Ar. " 05.15
"	12.00	Ar. Rome, Italy	De. Wednesday 22.45
"	13.30	De. Rome, Italy	Ar. " 21.45
"	17.15	Ar. Madrid, Spain	De. " 18.00
"	18.45	De. Madrid, Spain	Ar. " 17.00
"	21.45	Ar. London, England	De. " 12.30

Trans World Airline

West Bound Flights

East Bound Flights

	No. 907 Mon.	No. 903 Wed.	No. 905 Sat.		No. 902 Sun.	No. 904 Wed.	No. 906 Fri.
Bombay	dep. 16.00	16.00	16.00	New York	dep. 13.00	13.00	13.00
Dhahran	arr. 21.20	21.20	21.20	Gander	arr. 19.00	19.00	19.00
Dhahran	dep. 22.05	22.05	22.05	Gander	dep. 20.00	20.00	19.45
Basra	arr. 22.45	22.45	22.45	Shannon	arr. 07.10	07.10	06.55
Basra	dep. 23.30	23.30	23.30	Shannon	dep. 08.10	08.10	07.55
Cairo	Tue. 01.30	Thur. 03.15	Sun. 03.15	Paris	Mon. 11.50	Thur. 11.50	11.35
Cairo	arr. 02.30	04.15	04.15	Paris	12.50	12.50	12.35
Athens	dep. 07.45	09.30	07.30	Zurich	14.30	14.30	14.15
Athens	arr. 08.30	10.15	08.15	Zurich	15.15	15.15	15.00
Rome	dep. 11.15		10.30	Geneva	17.30	17.30	17.35
Rome	arr. 12.00		11.15	Geneva	18.15	18.15	18.20
Geneva	dep. 13.30		13.40	Rome	22.25	22.25	
Geneva	arr. 14.30		14.30	Athens	Tue. 01.05	23.10	Sun. 00.50
Zurich	dep. 16.30		16.10	Athens	02.20	02.20	01.50
Zurich	arr. 17.30		17.15	Cairo	Fri. 03.20	03.20	
Paris	dep. 17.30	13.45	17.15	Cairo	07.00		06.45
Paris	arr. 17.30	14.45	19.15	Basra	07.45		07.30
Shannon	dep. 17.30	16.45	20.15	Basra	10.25	10.15	10.10
Shannon	arr. 17.30	17.45	Mon. 20.15	Dhahran	11.10	11.00	10.55
Gander	arr. 05.05	00.20	03.50	Dhahran	18.45	18.35	18.30
Gander		01.20	07.50	Bombay			
NEW YORK		Fri. 05.20					

Towards Slower and Safer Flying

Improved Take-off and Landing

To fly farther, to fly higher and to fly faster have been the aims ever urging the aircraft designer on to further progress. Of all, the lust for high speed is the most compelling. Whilst the last few years have seen spectacular increases in the world's high speeds record, still higher performance in the supersonic region will be common place in the near future. To attain these speeds, largely made possible by the increased power and light weight of the turbo jet unit, the designer must seek out means still further to reduce aerodynamical drag.

Until now drag has been reduced chiefly by making the wetted surface of the aeroplane as small and as clean as possible. This has led to smaller wings and increased wing loadings and resulted in higher stalling speeds (unless special counteraction was taken) and, in consequence, to longer runs for take-off and landing.

The wing loadings have increased during the past 20 years. Due to these increased take-off and landing runs, airport

facilities have had to be extended to make present civil aviation on international trunk lines possible. Throughout the world, whether for civil or military aircraft, it has tacitly been assumed that an increase in landing speed could be tolerated and that, if necessary, runways would be lengthened to suit. Prior to the war of 1939-1945, runways, and certainly most municipal airports, were grass surfaced and seldom exceeded 3,000 ft. (900 metres) in length. The war, with its emphasis on the importance of air power, made possible the rapid creation and extension of runways, vast structures of hard core and concrete which hitherto would have been considered uneconomic and quite out of the question. It is now common place for even a small aerodrome to have in the runways the equivalent of 10 miles of first-class 40 ft. wide roads. Runways at London Airport and Filton are 10,000 ft. (3,000 metres) in length and some 300 ft. (900 metres) wide and cost about £ 1 million per runway. It is not surprising,

(Continued from previous page)

concerned about the provision of new types of aids where flying is comparatively restricted. For long-distance flights it seems probable that navigators will still need to be employed to bring aircraft within 100 miles of terminals where the V. O. R. short-distance aid and I. L. S. will assist safe landing. Furthermore, for domestic flying these types of aids that have been standardised in Annex 10 seem quite suitable where traffic density at terminal airports does not exceed during peak periods some 12 or 15 landings per hour. These remarks do not mean that complacency is justified; for instance, a safe method of automatic flying, particularly during approach and descent, would be a big step forward. The great problem, however, is

in those areas where it is desired to land many aircraft at one location in a short space of time and where the airways joining dense centres of population carry a density of many aircraft per hour. This problem has been attacked in the United States and a suggested solution is that offered in Report No. 31 of the Radio Technical Commission for Aeronautics. This Report proposes a plan which is estimated to cost in excess of \$ 1,100,000,000 and to take some 15 years to develop and install. It is based upon the employment of all known existing electronic techniques, including radar and television, and recent reports suggest that certain fundamental physical investigatory work will be required before continued progress can be made."

therefore, that the capital cost of London Airport will amount to some £ 26 million.

Limit to Big Runways

There is a limit, however, to this big runway policy. Few countries are likely to be able to afford to extend many of their smaller runways, much less to build many airports, to such a standard, for not only are they expensive in money, but the amount of land immobilised is unjustifiable. An easement of aerodrome landing strip facilities would be welcomed, it is believed by everyone—including the poor taxpayer. At some airports extensions will prove to be physically impossible and alternative sites, on the other hand, so distant from the cities they are to serve that aeroplanes must confirm to present limitations or the cities will have to forego the advantages that civil air transportation can confer.

One of the main objects of this paper is to draw the attention of all concerned—operator, designer, and not least the airport authorities—to these mounting capital and upkeep costs, which must eventually be borne as part of the price for air operations, and to review those aircraft design developments which would lead towards a simplification of the basic problems of the airport and airline operators.

The case for a review of landing and take-off requirements having been established, it now remains to consider how much and by what means the designer can reduce the runs for take-off and for landing of future types and in this way help to reduce operating costs to airline operator and airport authority alike. The operator should welcome lower landing and take-off speeds because they would provide additional safety. On days of poor visibility the pilot of a slower aircraft would take fewer risks because whilst his time for reaction to changing conditions is constant, the time interval to meet those emergencies is lengthened. If landing runs are reduced, a greater number of emergency landing grounds are available for use.

It seems reasonable to suppose that with slower minimum flying speeds, there would be a reduction in the use of alternative aerodromes when weather conditions are bad. This would improve block speeds, reduce the amount of non-productive flying time and, in turn, lead to better utilisation of a fleet of aircraft. We thus see that without any increase in actual cruising speed it is possible for the operator to achieve a higher block speed, which is, after all, what counts, especially as it leads to a higher utilisation. The airport authorities, too, are interested in the effects that slower flying speeds must have on airport costs and requirements.

In general, as will be seen from the accompanying table, the take-off distances of current air-transport types are longer than landing distances. Much of the present investigation is therefore concerned with reduction of take-off runs since the landing problem will also be looked after if we reduce minimum flying speeds.

The aerodynamical problem of increasing winglift and of reducing minimum flying speeds is examined for different arrangements of wing-flaps and wing-spans and is followed by a detailed investigation of means to increase lift by the creation of a forced current of air over the flaps so as to give an increased lifting effect over the whole wing. This development consists in using a special jet or rocket type of discharge. A most interesting conclusion is that such rockets or jets give a much greater reduction in the take-off run if used for this "boundary layer control" than when used merely to boost the take-off thrust of propellers.

Take-off and Landing Problem

A question now to be considered is how far improvements in equipment for take-off and landing can reduce the need for concrete runways, which make up the principal costs in aerodrome construction. Undercarriages, for current air transports, weigh from 4 per cent to 6½ per cent of the all-up weight, or almost 25 per cent of

the actual Hermes payload. We see that, even when the undercarriage weight is reasonable by present standards, the potential payload lost can be considerable. This is particularly significant for aeroplanes which are required, to carry out a nonstop London-New York service, for then payload and landing gear weights may be equal percentages of the all-up weight.

A return to the lower type pressures which were customary before concrete runways came into being would permit grass aerodromes to be used once more; but for modern aircraft the number of wheels necessary would be excessive and their stowage (when retracted) impossible. The substitution of track undercarriages for wheels would give an aeroplane that greater freedom of operation on grass which the caterpillar track vehicle has over a wheeled one; but the greater weight and heavier upkeep cost of the track undercarriage, compared with the normal wheeled chassis, make its use unattractive.

Bogie Undercarriages

A logical alternative to the undercarriage would be to mount the aeroplane on a multi-wheel bogie, so that it could operate from grass aerodromes. At the point of take-off, the bogie would be released from the aeroplane. For landing, a skid-undercarriage of sufficient height would be provided in order to mount the aeroplane easily on to a bogie again. The braking effect given by such a skid-landing gear would be superior to the present system and tyre wear associated with concrete runways would be eliminated. In transatlantic services, where the payload forms only a small percentage of the all-up weight, the gain in payload is so substantial that there is a promising case for the immediate development of the undercarriageless aeroplane.

It is clear that runway lengths and, therefore, aerodrome costs can be greatly reduced if there is a reduction in minimum flying speed. If the use of concrete

runways is retained a further saving in aerodrome cost can be effected if airports can be operated with a single uni-directional runway. For this, aeroplanes must be able to land with drift in a cross-wind.

The tricycle undercarriage has made possible landing in cross-winds, but such operations impose higher loads on the undercarriage which may be reduced by the use of the castoring undercarriage. With this device the aeroplane may approach and fly on to the runway in a somewhat crablike fashion.

Future Possibilities

We have seen that, in order to achieve faster speeds, the designer has cut down parasitic drag and reduced to a minimum the exposed area of an aeroplane. This has been done at the expense of minimum flying speeds, which now are greatly in excess of those of 20 years ago. As a result, take-off and landing runs have increased greatly and landing strips have been extended from about 3,000 ft. to as much as 10,000 ft., in order to ensure a maximum of safety during take-off and landing operations. This policy has led to an astronomical rise in the costs of modern civil airports and to annual upkeep charges of international concern.

The employment of rocket devices, in order to provide forced boundary-layer control and added lift, appears to be one of the most promising means which the designer has for the material reduction of minimum flying speeds. If they are reduced, the great advantages which derive from high-lift devices are: (a) the aeroplane is not increased in size and (b) the cruising speed or payload are not adversely affected. But, besides these operational gains, reduced minimum flying speeds give secondary advantages. These, no less important, are greater safety in take-off and landing and the extension of air transport to undeveloped and underpopulated regions.

(Continued on page 401 bottom)

"Omnirange" Marks Revolutionary Progress in Air Navigation

To keep pace with the rapid growth of air traffic, an entirely new kind of air navigation system—the omnirange—is being installed in the United States. The U. S. Civil Aeronautics Administration (CAA) reports that omnirange stations, sending out static-free, very high frequency radio signals in all directions, will provide pilots with an almost unlimited number of "flight paths." Of a total of 400 stations to be built throughout the nation, more than 300 already are in operation.

According to the CAA, the omnirange makes the system it replaces, seem primitive. It not only greatly increases the number of flight paths available—the old system provided only four—but it enables the pilot to remain "on course" with a minimum of effort. Instead of wearing earphones continuously, straining to hear the noisy, low-frequency signals of the old system, he merely has to glance occasionally at a needle on the instrument panel.

Now, in preparing for a flight, a pilot first consults his aeronautical chart that shows the frequency and location of each omnirange station. On the plane's omnirange receiving equipment, he tunes to the station that is approximately in line with his intended course, identifying the station through its code calls. After determining the compass bearing of the station in relation to the position of the plane, he turns a knob on an indicator until the bearing number appears on the indicator dial. If he is flying northeast, for example, on a course of 45 degrees, the numerals 045 will be continuously visible. Another indicator shows by the words "to" and "from" whether he is on a course to or from the station. A cross-point indicator

with a vertical needle that moves to right or left shows whether the plane is on or off the course.

All the pilot has to do is fly his plane so that the vertical needle remains centered. If it moves to the right, he flies right until it is centered. If it moves to the left, he turns left to correct his course. By continuing on his course with the needle centered, he will eventually fly directly over the omnirange. If he wishes to continue on the same course, he keeps the needle centered. If he wishes to change course, he can tune in a new course on the compass-bearing indicator in the direction desired.

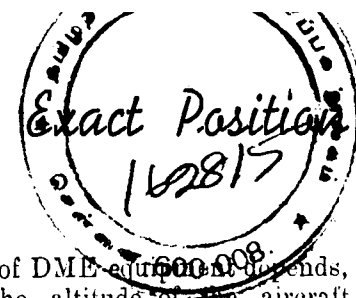
The omnirange stations also provide the pilots via voice radio with air traffic control instructions and weather information at regular intervals. He also can hear replies from communicators on the ground to any requests for information that he may send over his airplane radio transmitter. Thus, he is in constant touch with CAA ground personnel who are ready to aid him in any possible way.

Under ordinary circumstances, an omnirange station can be heard for 30 miles by aircraft 500 feet above the ground, 100 miles by planes flying at 5,000 feet. Maximum reception distance is 200 miles at 20,000 feet.

Omniranges are equally useful for flying on or off established major air routes. This is a boon to pilots of small personal and nonscheduled planes, the CAA notes.

The omnirange system is part of a huge airways modernization program now under way in the United States. The program is being conducted by the CAA in co-operation with other government agencies and civil aviation groups.

New Electronic Device gives Pilots Exact Position at all Times



Electronic aids that give airplane pilots their exact position on the airways at all times will soon go into production in the United States. By the end of 1953, says the U. S. Civil Aeronautics Administration (CAA), 600 of the devices will be operating as part of the nation's huge new air-navigation system.

Called distance-measuring equipment, or DME, the devices will be set up at radio-range stations that also are part of the system. The range stations, more than 300 of which already are in use, now send static-free radio pulses in all directions to keep pilots on their courses.

The DME equipment will give a pilot continuous data on how far his plane has progressed along a flight path. The information will appear on a simple dial located in the cockpit.

The DME equipment in the plane includes a special radio transmitter and receiver. The transmitter sends out static-free radio pulses. These pulses travel at a speed of approximately 186,000 miles a second. The DME equipment at the range station toward which the plane is flying receives the pulses, and then sends back to the plane another set of radio pulses on the same frequency. The time required for this "round trip" is measured by the receiver in the plane, and the information appears on the cockpit dial in terms of miles. As average of 30 such "round trips" between plane and ground station will occur each second.

The range of DME equipment depends, in part, on the altitude of the aircraft and the power and sensitivity of the air-borne equipment. Its normal range is about 40 miles at 1,000 feet and up to 200 miles at very high altitudes.

As many as 50 airplanes can be served at one time by a single DME ground station, says the CAA. When increased traffic makes additional capacity desirable, it can be provided by modifying the ground equipment. A unique system of frequency distribution prevents confusion between responses by the ground station to the various aircraft.

A program of modernizing the nation's airways, now being conducted by the CAA in co-operation with other government agencies and civil aviation groups, is expected to be completed by about 1965. The program is designed to increase flying safety and enable planes to maintain clock-like schedules regardless of weather conditions. Ultimately the airway system will operate almost automatically, CAA officials say. The scientific principles on which it will operate are known, but many of the devices themselves have yet to be invented, developed, and tested through long research programs.

"The air-navigation program will aid the growth and maturity of aviation the world over," says D. W. Rentzel, CAA Administrator. "Whatever helps aviation in one area eventually brings similar wherever man can fly."

(Continued from previous page)

With the modern trend towards uni-directional runways in place of the present triangulated schemes, the added value of lower minimum flying speeds is at once evident. With distances for take-off and landing reduced to 900 yards the employment of one landing strip,

with airport buildings situated centrally, becomes possible. A final but no less important development recommended for serious study is the adoption of simpler arrangements of undercarriages which become rational when minimum speeds have been reduced to about 70 m. p. h.

(Modern Transport)

Comet's London-Australia Service

Preparation Under Way After Route Survey

By CHARLES GARDNER,
B. B. C. Air Correspondent.

Carrying 36 passengers, and cruising at 490 miles an hour, Britain's jet Liner, the Comet, will be on B.O.A.C.'s London-Australia route by 1952. This revolutionary passenger service has occasioned a high degree of international co-operation, and airfields along the 12,000-mile route are being brought up to standard to meet the Comets ground requirements.

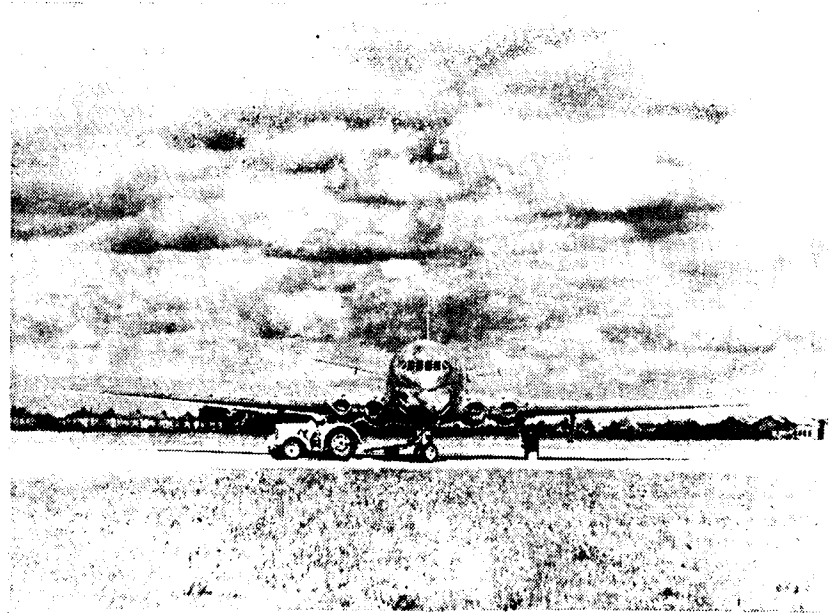
The 500 miles-an-hour route for the Comet jet airliner from London to Australia is taking shape. Sir Miles Thomas, Chairman of British Overseas Airways Corporation, has just completed a 30,000-mile tour of the places on the route at which the Comet will land. With him, for a large part of the journey, was Sir Frank Whittle, inventor of the gas turbine and now adviser on jet developments to B. O. A. C.

Sir Miles returned full of optimism, for, everywhere he found willingness to help the Comet and provide facilities. Without such co-operation this most revolutionary airline service ever to be planned could easily be held up, and, in

an extreme case, even made impossible. It is now happily clear, however, that, on the Australia run all will be well, and that the technical aids and airfield requirements will, where at present lacking, be installed.

Local Pride

Sir Miles puts down the high degree of international co-operation which he and Sir Frank encountered, to a genuine desire to see this fine United Kingdom airliner take its place in the forefront of world air transport. To this was allied a feeling of local pride that the Comet service would be available at one airport rather than at another, and to longer term hope held by several national airlines that they, too,



This head-on view of the de Havilland "Comet" airliner, fourteen of which are on order for BOAC, clearly shows the aircraft's aerodynamically clean lines. The four pure-jet de Havilland Ghost engines, each developing 5000 lbs. thrust, are neatly contained in the roots of the relatively thin wings and give the airliner a cruising speed in the neighbourhood of 500 miles an hour at some 40,000 feet.

Getting 130 tons of Brabazon into the air.. and down again



Among the formidable problems in the development of the Brabazon I, were those associated with take-off and landing. Here Dunlop was able to play a valuable part. The Tyres, Wheels, Brakes and Braking System for this aerial Leviathan were specially developed and made by Dunlop.

Typical of the problems was that of absorbing in 16 seconds the frictional heat generated during braking. The heat amounts to something like 70,000 British Thermal Units—sufficient to light a mile of city street for 2¼ hours with mercury vapour lamps. Dunlop also provided more than 500 feet of

Flexible Pipes used throughout the aircraft as well as other essential components.

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would be operating Comets one day, and would be needing the new facilities anyway.

Not that the Comet's ground requirements are in any way outrageous or expensive. Sir Miles asked for three things only: Long range short-wave radio telephony; the standard instrument landing system of radio-beam approach; and a 2,500 yard runway. The preliminary route survey had shown that the initial ports of call when the service opens should, if possible, be Rome, Cairo, Bahrein or Basra, Karachi, Calcutta, Bangkok, Singapore, Jakarta, Darwin and Sydney. There was (and still is) no plan to take the Comet on to New Zealand, as the trans-Tasman route is regarded as being essentially a flying-boat one. The extensions to Christ Church airfield, which are being made for the 1953 New Zealand Air Race, might, however, modify this view.

Dum Dum Runway

Inspection and consultation on the spot has shown that all the airfields considered in this survey are capable of receiving the Comet, or are in the process of being brought up to standard. At Calcutta, for instance, the Dum Dum runway is already being lengthened to over 2,500 yards to handle existing traffic, and the bearing strength problems at Singapore are already being resolved. In the middle East, Bahrein is preferred to Basra, though the two together make good alternates one for the other, and in Australia both Darwin and Sydney runways are perfectly alright as they are now.

A number of airfields, however, still lack either the long-range radio-telephony or the instrument landing system, or both. The first is essential for the Comet, since any losing of time which may be ordered to avoid landing

turn delays in a stack, must be done while the aircraft is still at an operational height at which fuel consumption is not prohibitive. The Comet can wait about happily at 30,000 feet but, like all jets, cannot too easily face a stack hold-up at the medium heights at which jet motors are inefficient. A 400-mile radio-telephone range, therefore, is required so that landing arrangements and exact local weather can be passed on to the pilot before he leaves his stratospheric fastness and starts to come down to earth.

Instrument Landing System

The instrument Landing System, the only other specified Comet requirement, is not, in fact, anything special at all, since the International Civil Aviation Organisation have long agreed that I. L. S. should be world standard equipment at major airfields, and all I. C. A. O. countries have agreed to install it. There has been some hold up on supplies of equipment, but I am told that United Kingdom built apparatus is now easing the position.

Flight Schedule

With the ground cleared for action, B. O. A. C. can now work on their schedules for the world's first jet-liner service. They hope to have a de Havilland sponsored flight all along the route later this year, followed by a series of route proving trials all through 1951, culminating in a fare-paying passenger service in 1952. At first the route will be in stages, probably terminating first at Calcutta and then being extended to Sydney. The complete route will take about 45 hours to fly including nine intermediate halts of an hour each—36 hours' flying time for 12,000 miles. The intermediate stops at Rome, Bahrein and Jakarta may later disappear, and the schedule would then come down to 38 hours over-all and 32 hours flying time.

The present Constellation schedule is one of four days. To accomplish this staggering average, the Comet will cruise at 490 miles an hour and will carry 36 passengers.

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Flowers Fly by Air

Picked in the morning, auctioned a few hours later, then packed in boxes and rushed to Schiphol, the flowers of Holland, the land of the smiling bulb fields, are carried by the Flying Dutchman far beyond the Dutch borders. In the afternoon beautiful Dutch tulips, fragrant roses, carnations and lilacs are displayed in the shop windows of Zurich, Stockholm, London, Oslo, Brussels and other big cities in Europe.

The flower centre in the Netherlands is Aalsmeer, which looks like a big glass village from the air. This is the place where many varieties of flowers are cultivated. Millions of them are grown on an area covering nearly 800 acres. The nature of the soil and the climate are ideal for the cultivation of flowers.

The flowers are picked early in the morning, packed in large baskets and then sent by boat, car or truck to the auctioning centre at Aalsmeer. After the bargain is struck they are swiftly, but carefully packed in light oblong boxes specially made for carrying flowers by air. The flowers are placed in such a way that the buds are on the outside. The stalks are placed one on top of the other in the centre of the box and are tied together by means of a piece of wood. The entire bundle is then covered with blotting paper and wood-wool, so that flowers inside are neither displaced nor damaged. On long distance stretches a quantity of "dry ice" is placed in the boxes in order to keep the temperature as low as possible. An important feature of "dry ice" is that it does not melt, but evaporates without leaving any trace.

In Holland there are laboratories where many kinds of packing materials are carefully studied and tested so as to solve the problems of varying temperatures, and relative degrees of humidity that confront transportation of flowers by air. In co-operation with the "Scientific Bureau" of K. L. M. the laboratory of the "Institute for Research on Vegetables and Fruits" in the Netherlands is conducting valuable experiments.

For more than 20 years K. L. M. has been carrying flowers. In the days of the Fokker F-2, the pilot used to say: "Just a moment, men, the flower boys have not yet arrived." The aircraft carrying flowers was called the "Flower Express." Times have changed since then. Fast vans and trucks from Aalsmeer deliver the flowers at Schiphol to be transported by the modern Constellations to towns and countries on K. L. M.'s 85,000 mile air route. The Flying Dutchman has fixed rates for carriage of flowers and that is why nearly all flower transports from the Netherlands are handled by this Company. Flowers are being regularly carried by K. L. M. not only to the capitals in Europe, but to the two Americas, South Africa and Egypt. Last year five thousand gladioli from Holland were on view at the "National Garden Show," the great British Flower Show held in the Olympian Building in London. The boxes of these flowers weighed 12 cwts and occupied 250 cubic feet of space on board a special K. L. M. plane which carried them to London. In 1948, this airline transported 220,000 lbs. of flowers and the figure increased to slightly more than 350,000 lbs. in 1949.

Jet Helicopter

A helicopter powered with pulse jet motors mounted on each tip of its rotor blade is being tested in the United States. Designated the XA-5, the ship is designed to lift heavy loads over short distances, and has simpler parts and less weight than standard helicopters.

Its two motors, weighing 24 pounds, give a combined performance equal to that of a 300 pounds piston engine. They are started by a stream of compressed air short into the intake ducts. In full flight, centrifugal force causes their weight to increase to 2,800 pounds each. This weight is not supported by the rotor blade, but by a metal belt running from the rotor shaft through the blade to the blade tips.

The new helicopter was developed by the American Helicopter Company of Manhattan Beach, in the State of California. Company officials say that large pulse-jet models could be powered with as many as 12 engines in each blade to lift a gross load of 20,000 pounds.

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(Continued from page 380)

The Board tentatively decided to take over the civil aviation unit at Barrackpore near Calcutta and administer it as a wing of the Hindusthan Aircraft Factory. The unit will overhaul military and civil aircraft using the Calcutta airport. The need for a servicing station near Calcutta was felt as a result of Calcutta's increasing importance as an international airport. At present almost all the airlines have to take up their engines to Bangalore for overhaul and C of A all the way from Calcutta!! It is hoped that when the above schemes are implemented, the long-felt need of airlines to have an Engine overhaul factory near Calcutta is thus fulfilled.



The "Aerocar," an automobile that can be converted easily into an airplane, was demonstrated recently at longview, Texas, in southwestern United States. Attached to the automobile is a flight component trailer with wings that are folded back when the vehicle is travelling on the highway. The wings, when expanded and fitted to the car, have a 30-foot span. The Aerocar has a speed of 50 miles an hour on the ground and can travel 100 miles an hour in the air with a range of 300 miles. It takes off with a 655-foot run, lands within 300 feet, and can be kept in a home garage. It is powered by a pressure air-cooled rear engine.

The photographs show the Aerocar ready to be used for a highway trip (at bottom) and in flight after being converted into an airplane (at top).

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INTERNATIONAL AIRLINES

FARES AND FREIGHT SCHEDULE Air India International Fare & Freight Schedule

From	To	Single	Return	Excess Baggage per kilo	
		Rs.	Rs.	Rs.	As.
Bombay	Basra	720	1296	7	0
Bombay	Cairo	1147	2064	11	8
Bombay	Geneva	1787	3216	17	15
Bombay	London	1854	3336	18	9
Basra	Cairo	454	816	4	9
Basra	Geneva	1091	1964	10	15
Basra	London	1200	2160	12	0
Cairo	Geneva	770	1386	7	12
Cairo	London	894	1608	8	15
Geneva	London	200	360	2	0
Bombay	Aden	734	1320	7	6
Bombay	Nairobi	1107	1992	11	1

Cargo Rates Bombay—Aden. Under 45lbs. Rs 5-3-0 per Kilo and Over 45 lbs. Rs. 3-15-0 per Kilo
 Cargo Rates Bombay—Nairobi. Under 45 lbs. Rs. 7-1-0 per Kilo and Over 45lbs. Rs. 5-5-0 per Kilo

Air France Fare & Freight Schedule

From Calcutta To	Single	Return	Baggage		Freight	
	Rs.	Rs.	Rs.	As.	Rs.	As.
Cairo	1334	2400	13	4	7	13
Glasgow	2160	3888	21	8	9	15
London	2053	3696	20	8	9	2
Marseilles	1933	3480	19	4	8	12
Karachi	360	648	3	8	3	6
New York	3719	6097	37	4	19	11
Paris	2027	3648	20	4	9	0
Saigon	667	1200	6	12	5	11
Oslo	2296	4133	23	0	10	12

British Overseas Airways Corporation

CALCUTTA To	Single	Return	Off-season	Return
	Rs.	Rs.		
Auckland	... 2347	4225	—	—
Bahrein	... 827	1489	—	—
Bangkok	... 454	818	—	—
Cairo	... 1334	2402	—	—
Hongkong	... 880	1584	—	—
Jakarta	... 987	1777	—	—
Karachi	... 360	648	—	—
London	... 2054	3698	3208	—
Montreal	... 3652	6574	5442	—
New York	... 3719	6695	5530	—
Rangoon	... 267	481	—	—
Rome	... 1787	3217	—	—
Singapore	... 774	1394	—	—
Sydney	... 2014	3626	—	—
Tokyo	... 1587	2857	—	—
Washington	... 3783	6815	6652	—

DELHI To	Rs.	Rs.	Off-season Return
Bahrein	... 654	1178	—
Cairo	... 1160	2088	—
Karachi	... 187	337	—
London	... 1894	3410	3020
Montreal	... 3492	6286	5154
New York	... 3559	6407	5242
Rome	... 1614	2906	—
Washington	... 3623	6527	5364
	Single	Return	Off-season Return
BOMBAY To	Rs.	Rs.	Rs.
Bahrein	... 614	1106	—
Cairo	... 1147	2065	—
Colombo	... 267	481	—
London	... 1854	3338	2948
Montreal	... 3452	6214	5082
New York	... 3519	6335	5170
Rome	... 1574	2834	—
Singapore	... 974	1754	—
Sydney	... 2214	3986	—
Washington	... 3583	6455	5292

Braathens S. A. F. E. Air-Transport A/S

Fare and Freight Schedule

From Calcutta To	Single Rs.	Return Rs.	Excess Rs. As.	Freight Rs. As.
Abadan	800	1440	8 0	4 6
Amsterdam	1867	3360	18 11	8 10
Athens	1387	2496	13 13	7 6
Bangkok	400	720	4 0	2 13
Bombay	250	450	2 8	1 6
Cairo	1267	2280	12 11	8 2
Geneva	1760	3168	17 9	8 8
Hongkong	767	1380	7 10	5 8
Karachi	360	648	3 10	3 10
Oslo	2027	3648	20 7	12 6
Rome	1609	2902	16 2	8 0

K. L. M. Royal Dutch Air Lines

Fare and Freight Schedule

Calcutta To	Single Rs.	Return Rs.	Excess Baggage Rs. As. Ps.	Freight per lb. Rs. As. Ps.
Amsterdam	1,867	3,360	18 10 8	3 14 7
Bangkok	400	720	4 0 0	1 4 2
Basra	853	1,536	8 8 10	2 14 10
Batavia	867	1,560	8 10 8	2 13 3
Cairo	1,267	2,280	12 10 8	3 11 0
Damascus	1,173	2,112	11 11 6	3 4 3
Karachi	360	648	3 9 9	1 11 1
Rome	1,627	2,928	16 15 1	3 9 0
Singapore	720	1,296	7 3 6	2 3 11

Pan American Airways

Fare Schedule

Calcutta To	Rs.		Rs.
Brussels	1,869	London	1,882
Damascus	1,174	New York	3,040
Hongkong	801	San Francisco	3,143
Honolulu	2,696	Tokyo	1,482
Karachi	361		

Philippine Air Lines Inc.

Passenger Fare Schedule

	One way Rs.	Round Trip Rs.
CALCUTTA		
Manila	1057	1896
Lydda (Jerusalem)	1227	2208
Madrid	2054	3696
Rome	1787	3216
London	2054	3696

Scandinavian Airlines System

Fares and Freight Schedule

From Calcutta To :	Single Rs.	Return Rs.	Excess Baggage Rs. As. Ps.
Stockholm	2326	4187	23 6 0
Copenhagen	2223	4001	22 4 0
Frankfurt	2027	3648	20 5 0
Lydda (Jerusalem)	1227	2208	12 5 0
Zurich	2000	3600	20 5 0
Rome	1787	3216	17 14 0

Trans World Airline

BOMBAY To	Single Rs.	Return Rs.	Single Rs.	Return Rs.
Athens	1400	2520	Paris	1814½
Basra	724	1296½	Rome	1576½
Cairo	1148	2064½	Shannon	1995½
Dhahran	614½	1104½	CALCUTTA	
Geneva/Zurich	1790½	3216½	London	2057½
London	1857½	3336½	Geneva	2000
San Francisco	4239½	7679	Paris	2029
New York	3624	6386½	New York	3724

INDIAN AIRLINES

FARES AND FREIGHT SCHEDULE

Air Ceylon

Fare and Freight Schedule

From	To	Single	Return	Freight per lb.	Excess Baggage per lb.
		Rs.	Rs. As.	Rs. As. Ps.	Rs. As. Ps.
Colombo	Jaffna	35	66 8	0 4 0	0 4 0
	Trichy	70	133 0	0 8 0	0 8 0
	Madras	85	162 0	0 7 3	0 7 3
	Bombay	230	437 0	0 14 6	0 14 6
Jaffna	Karachi	365	694 0	1 8 0	1 8 0
	Trichy	35	66 8	0 4 0	0 4 0
	Madras	50	95 0	0 5 8	0 5 8
	Bombay	195	371 0	0 10 5	0 10 5
Trichy	Karachi	330	627 0	1 4 0	1 4 0
	Karachi	270	513 0	1 0 0	1 0 0
Bombay	Karachi	150	285 0	0 8 0	0 8 0

Air India Limited

Fares List

From	To	One-way Fare	Round Trip Fare	Excess Baggage per Kilo
		Rs.	Rs.	Rs. A.
Bangalore	Cochin	60	114	0 8
Bangalore	Coimbatore	35	67	0 5
Bangalore	Trivandrum	80	152	0 11
Bombay	Calcutta	220	418	1 14
Bombay	Colombo	230	437	2 2
Bombay	Delhi	175	333	1 8
Bombay	Hyderabad	75	143	0 11
Bombay	Jaipur	124	236	1 6
Bombay	Madras	140	266	1 4
Cochin	Trivandrum	30	57	0 4
Coimbatore	Cochin	25	48	0 3
Coimbatore	Trivandrum	50	95	0 7
Hyderabad	Colombo	150	285	1 9
Hyderabad	Madras	65	124	0 9
Jaipur	Delhi	31	59	0 5
Karachi	Bombay	150	285	1 8
Karachi	Colombo	365	694	3 8
Karachi	Madras	303	576	2 12
Madras	Bangalore	40	76	0 6
Madras	Cochin	75	143	0 13
Madras	Coimbatore	60	114	0 10
Madras	Colombo	85	162	1 0
Madras	Trivandrum	100	190	1 1

Airways (India) Limited

Fare and Freight Schedule

From	To	Single	Return	Excess Bag. and Freight charge per lb.
		Rs.	Rs.	Rs. A.
Calcutta	Bhubneswar	55	104½	0 4
Calcutta	Vishakhapatnam	105	199½	0 8
Calcutta	Madras	195	370½	1 0
Calcutta	Bangalore	230	437	1 3
Calcutta	Dacca	50	95	0 4
Calcutta	Bagdogra	74	140½	0 6
Calcutta	Gauhati	77	147	0 6
Calcutta	Mohanbari	127	241½	0 10
Bhubneswar	Vishakhapatnam	55	104½	0 4
Bhubneswar	Madras	140	266	0 12
Bhubneswar	Bangalore	175	334½	0 15
Bhubneswar	Madras	90	171	0 8
Vishakhapatnam	Madras	125	237½	0 11
Vishakhapatnam	Bangalore	40	76	0 3
Madras	Bangalore	50	95	0 4
Gauhati	Mohanbari			

Bharat Airways Limited

Fare and Freight Schedule

From	To	Single	Return	Freight Excess bag. per lb.
		Rs.	Rs.	Rs. A.
Calcutta	Agartala	50	95	0 4
Calcutta	Patna	75	142	0 6
Calcutta	Benares	101	192	0 8
Calcutta	Lucknow	139	264	0 11
Calcutta	Kanpur	98½	187	0 11
Calcutta	Allahabad	79½	151	0 9
Calcutta	Delhi	190	361	1 0
Calcutta	Chittagong	54½	99	0 4½
Calcutta	Chittagong	27½	49½	0 4½
Calcutta	Chittagong	5½	11	0 4½
Calcutta	Gauhati	75	142	0 6
Calcutta	Gauhati	38	72	0 3
Agartala	Benares	35	67	0 4
Patna	Lucknow	73	139	0 6
Patna	Delhi	138	263	0 11
Benares	Lucknow	38	72	0 4
Benares	Delhi	102	194	0 8
Lucknow	Delhi	65	123	0 6
Allahabad	Kanpur	18	34	0 2½
Allahabad	Delhi	59½	113	0 7
Kanpur	Delhi	42½	81	0 5
Calcutta	Bangkok	350	680	Excess bag. Freight per Kilo 3-8-0

Deccan Airways

		Fare and Freight Schedule		Excess Baggage or	
From	To	Single	Round Trip	Freight per lb.	
		Rs.	Rs.	Rs.	As.
Madras	Hyderabad	65	124	0	5
"	Nagpur	110	209	0	10
"	Delhi	217	412	1	3
"	Bombay	140	266	0	10
Hyderabad	Nagpur	50	95	0	5
"	Delhi	160	304	0	13
"	Bombay	75	143	0	6
"	Bangalore	65	124	0	6
Nagpur	Delhi	110	209	0	9
Bangalore	Bombay	135	257	0	11
"	Delhi	217	412	1	3
"	Nagpur	110	209	0	11

Indian National Airways Limited

		Fare and Freight Schedule			Return			Freight and	
From	To	Single			Adult			Excess Bag.	
		Adult	Child	Infant	Adult	Child	Infant	per lb.	
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	A.
Delhi	Calcutta	203	102	21	386	194	42	1	0
Delhi	Karachi	150	75	15	285	143	30	0	13
Delhi	Lahore	66	33	7	126	63	14	0	5
Delhi	Jodhpur	75	38	8	143	72	16	0	6
Delhi	Amritsar	65	33	7	124	62	14	0	5
Delhi	Jammu	95	48	10	181	91	20	0	7½
Delhi	Srinagar	120	60	12	228	114	24	0	9
Jodhpur	Karachi	95	48	10	181	91	20	0	8
Calcutta	Jodhpur	278	139	28	529	265	56	1	6
Calcutta	Karachi	350	175	35	630	315	70	1	11
Calcutta	Rangoon	235	118	24	447	224	48	1	2
Amritsar	Jammu	30	15	3	60	30	6	0	2½
Amritsar	Srinagar	65	33	7	124	62	14	0	5
Jammu	Srinagar	35	18	4	79	35	8	0	2½

Orient Airways Limited

		Fare and Freight Schedule		Freight		Excess Baggage	
From	To	Single	Return	per lb.	per lb.	per lb.	per lb.
		Rs.	Rs.	Rs.	A.	Rs.	A.
Calcutta	Karachi	361	95	2	3	2	3
Calcutta	Rangoon	200	99	0	15	0	15
Calcutta	Akyab	100	61	0	8	0	8
Calcutta	Dacca	50	684	0	4	0	4
Calcutta	Chittagong	54	380	0	4½	0	4½
Chittagong	Dacca	32	190	0	4	0	4
Dacca	Karachi	350	665	2	0	2	6
Chittagong	Rangoon	140	266	0	11	0	11
Chittagong	Akyab	40	86	0	4	0	4
Dacca	Delhi	200	380	1	2	1	2

Air India Limited

TIME: I. S. T.

BOMBAY—KARACHI—BOMBAY

		(Daily)		Flight	Flight
Flight	Flight	Bombay		No. 2	No. 1
No. 1	No. 2	Dep.	Arr.	No. 2	No. 1
07.15	10.00	Dep.	Arr.	17.10	17.50
09.05	...	Arr. }	Dep.	...	15.50
09.35	...	Dep. }	Arr.	...	15.30
12.10	13.10	Arr.	Dep.	14.10	13.10

BOMBAY—DELHI—BOMBAY**Aircraft : Dakota (Daily)**

		Tue. Thurs. Fri. & Sun.		Wed. Fri. Sat. & Mon.	
Flight	Flight	Dep.	Arr.	Dep.	Arr.
11.50	13.40	Dep.	Arr.	17.20	15.20
14.05	16.10	Arr. }	Dep.	14.55	12.40
16.25	17.25	Dep. }	Arr.	12.25	11.15
		Arr.	Dep.		

**BOMBAY—CALCUTTA—BOMBAY
(Daily Viking)**

Flight	Flight	Dep.	Arr.	Dep.	Arr.
07.30	12.50	Dep.	Arr.	12.50	07.00
		Arr.	Dep.		

BOMBAY—MADRAS—TRICHY—COLOMBO

		(Daily)		Flight	Flight
Flight	Flight	Dep.	Arr.	No. 2	No. 1
09.00	12.55	Dep.	Arr.	16.05	11.50
13.30	14.55	Arr.	Dep.	11.20	10.00
15.40	17.40	Dep.	Arr.	09.15	07.15
		Arr.	Dep.		

BOMBAY—MADRAS—BOMBAY

		Mon. Wed. & Sat.		Tue. Thu. & Sun.	
Flight	Flight	Dep.	Arr.	Dep.	Arr.
12.15	16.10	Dep.	Arr.	11.45	07.30
		Arr.	Dep.		
Day	Night Service	Dep.	Arr.	Day	Night Service
08.30	01.30	Dep.	Arr.	12.30	06.15
12.15	05.25	Arr.	Dep.	08.30	02.00

Air Services of India Limited**BOMBAY-INDORE-GWALIOR**

Mon. Wed. Fri. I. S. T.				Mon. Wed. Fri. I. S. T.
06.45	Dep.	Bombay	Arr.	16.25
08.20	Arr.	Indore	Dep.	14.45
08.40	Dep.	Indore	Arr.	14.20
10.05	Arr.	Gwalior	Dep.	12.50
10.15	Dep.	Gwalior	Arr.	12.40
11.15	Arr.	Delhi	Dep.	11.40

BOMBAY-JAMNAGAR-BHUJ-KARACHI

Tue. Wed. Fri. & Sun. I. S. T.				Tue. Wed. Fri. & Sun. I. S. T.
08.00	Arr.	Bombay	Arr.	17.35
10.00	Dep.	Jamnagar	Dep.	15.35
10.20	Arr.		Arr.	15.15
10.50	Arr.	Bhuj	Dep.	14.45
11.05	Dep.		Arr.	14.30
12.30	Arr.	Karachi	Dep.	13.15

BOMBAY-BHAVANAGAR-RAJKOT

Daily				Daily
08.15	Dep.	Bombay	Arr.	13.20
09.30	Arr.		Dep.	12.05
09.45	Dep.	Bhavanagar	Arr.	11.50
10.35	Arr.	Rajkot	Dep.	11.00

BOMBAY-POONA-BANGALORE

Tue. Thur. Sat. Sun. I. S. T.				Tue. Thur. Sat. Sun. I. S. T.
07.00	Dep.	Bombay	Arr.	13.45
07.30	Arr.		Dep.	13.15
07.45	Dep.	Poona	Arr.	13.00
10.00	Arr.	Bangalore	Dep.	10.30

BOMBAY-KESHOD-PORBANDAR-RAJKOT-JAMNAGAR-BHUJ

Mon. Thur. & Sat.				Mon. Thur. & Sat.
08.00	Dep.	Bombay	Arr.	15.45
09.30	Arr.	Keshod	Dep.	14.15
09.45	Dep.		Arr.	14.05
10.05	Arr.	Porbandar	Dep.	13.45
10.20	Dep.		Arr.	13.30
10.50	Arr.	Jamnagar	Dep.	13.00
11.10	Dep.		Arr.	12.30
11.40	Arr.	Bhuj	Dep.	12.00

Bharat Airways**CALCUTTA-DELHI-CALCUTTA**

Aircraft: Dakota				Frequency: Daily
06.30	Dep.	CALCUTTA	Arr.	13.50
08.40	Arr.	PATNA	Dep.	12.00
08.55	Dep.		Arr.	11.45
09.55	Arr.	BENARES	Dep.	10.50
10.05	Dep.		Arr.	10.40
11.15	Arr.	LUCKNOW	Dep.	09.40
11.30	Dep.		Arr.	09.25
13.25	Arr.	DELHI	Dep.	07.45

CALCUTTA-DELHI-CALCUTTA

Aircraft: Dakota				Frequency: Once a week (Day Return) Fridays
05.45	Dep.	CALCUTTA	Arr.	18.40
09.05	Arr.	ALLAHABAD	Dep.	15.50
09.20	Dep.		Arr.	15.35
10.15	Arr.	KANPUR	Dep.	14.50
10.25	Dep.		Arr.	14.40
12.20	Arr.	DELHI	Dep.	13.00

CALCUTTA-CHITTAGONG-CALCUTTA

Aircraft: Dakota				Frequency: Daily
14.30	Dep.	CALCUTTA	Arr.	18.10
16.05	Arr.	CHITTAGONG	Dep.	16.35

CALCUTTA-AGARTALA-GAUHATI

Daily	Daily				Daily Mon. Fri. Tue. Wed. Thu. Sat. & Sun.
07.30	06.00	Dep.	Calcutta	Arr.	14.20 1425 1650
08.50	07.20	Arr.	Agartala	Dep.	13.00 1305 1530
	07.35	Dep.	Agartala	Arr.	12.45
	08.45	Arr.	Gauhati	Dep.	11.25

GAUHATI-TEZPUR

Aircraft: Dakota				Frequency
Mon. Tue. Thu. Sat. Sun.				Mon. Tue. Thu. Sat. Sun.
0900	Dep.	Gauhati	Dep.	1120
0935	Arr.	Tezpur	Arr.	1045

CALCUTTA-BANGKOK-CALCUTTA

Frequency: Wednesdays (Day return)				Aircraft: Skymaster.
07.00	Dep.	Calcutta	Arr.	18.30
12.00	Arr.	Bangkok	Dep.	13.30

Deccan Airways Limited

DELHI-MADRAS-DELHI				
Aircraft : Dakota.		Frequency : Daily.		
I. S. T.				I. S. T.
06.30	Dep.	DELHI	Arr.	14.25
09.50	Arr.	NAGPUR	Dep.	11.10
10.05	Dep.		Arr.	10.50
11.45	Arr.	HYDERABAD	Dep.	09.10
12.05	Dep.		Arr.	08.35
14.10	Arr.	MADRAS	Dep.	06.30

HYDERABAD-BANGALORE-HYDERABAD				
Aircraft : Dakota.		Frequency : Daily.		
12.15	Dep.	HYDERABAD	Arr.	08.30
14.15	Arr.	BANGALORE	Dep.	06.30

HYDERABAD-BOMBAY-HYDERABAD				
Aircraft : Dakota		Frequency : Daily.		
09.00	Dep.	HYDERABAD	Arr.	11.55
11.30	Arr.	BOMBAY	Dep.	09.30

Indian National Airways

CALCUTTA-DELHI				
Aircraft : Viking		Frequency : Daily.		
I. S. T.				I. S. T.
13.15	Dep.	Calcutta	Arr.	12.15
17.45	Arr.	Delhi	Dep.	08.00

DELHI-JODHPUR-KARACHI				
Wed. Fri. & Sun.				
08.15	Dep.	Delhi	Arr.	19.00
10.15	Arr.	Jodhpur	Dep.	17.00
10.45	Dep.	Jodhpur	Arr.	16.30 (Tea)
13.15	Arr.	Karachi	Dep.	14.00

DELHI—SRINAGAR								
Sun. Mon. Wed. Fri.			Tue. Thur. Sat.			Tue. Thur. Sat.	Sun. Mon. Wed. Fri.	
07.30	07.30	09.15	Dep.	Delhi	Arr.	19.20	18.30	18.30
09.15	09.15		Arr.	Amritsar	Dep.	17.35		16.45
09.45	09.45		Dep.	Amritsar	Arr.	17.05		16.15
	10.35		Arr.	Jammu	Dep.	16.15		
	11.00		Dep.		Arr.	15.50		
11.00	11.50	11.45	Arr.	Srinagar	Dep.	15.00	16.00	15.00

SRINAGAR-JAMMU-SRINAGAR				
Aircraft : Dakota		Frequency : Mon. Wed. Fri. & Sun.		
11.40	Dep.	Srinagar	Arr.	14.00
12.30	Arr.	Jammu	Dep.	13.10

CALCUTTA-RANGOON				
Aircraft : Dakota		Frequency : Daily		
08.00	Dep.	Calcutta	Arr.	16.45
12.00	Arr.	Rangoon	Dep.	12.45
13.00		Burma Time		13.45

DELHI-LAHORE

Aircraft : Dakota/Viking					Daily
08.45	Dep.	Delhi	Arr.	12.45	
10.30	Arr.	Lahore	Dep.	11.00	

Indian Overseas Airlines**BOMBAY-NAGPUR-CALCUTTA**

Frequency : Daily.				
Aircraft : Dakota				I. S. T.
I. S. T.				
07.00	Dep.	Bombay	Arr.	12.55
09.40	Arr.	Nagpur	Dep.	10.15
10.10	Dep.		Arr.	09.55
13.50	Arr.	Calcutta	Dep.	06.00

		Passenger fares.		Freight & Excess baggage per lb.	
		Single	Return		
Bombay	to	76	144	0	6
Bombay	to	185	351	0	14
Nagpur	to	109	207	0	9

Kalinga Air Lines**CALCUTTA-AGARTALA-CALCUTTA**

Frequency : 6 Times Daily		(Freight and Mails only)		Aircraft : Dakota.	
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		First Aircraft		Arr. Agartala		Hrs.	
Dep.	Dum Dum	0425	Hrs.	Dep.	Agartala	1620	"
Arr.	Agartala	0545	"	Arr.	Dum Dum	1810	"
Dep.	Agartala	0610	"	Second Aircraft			
Arr.	Dum Dum	0730	"	Dep.	Dum Dum	0435	Hrs.
Dep.	Dum Dum	0755	"	Arr.	Agartala	0555	"
Arr.	Agartala	0915	"	Dep.	Agartala	0620	"
Dep.	Agartala	0940	"	Arr.	Dum Dum	0740	"
Dep.	Dum Dum	1100	"	Dep.	Dum Dum	0810	"
Arr.	Dum Dum	1125	"	Arr.	Agartala	0930	"
Arr.	Agartala	1245	"	Dep.	Agartala	1645	"
Dep.	Agartala	1310	"	Arr.	Dum Dum	1805	"
Arr.	Dum Dum	1430	"				
Dep.	Dum Dum	1500	"				

Freight Schedule

Calcutta-Agartala Rs. 0-4-0 per lb.

Orient Airways
CALCUTTA-DACCA-CALCUTTA

Aircraft : Dakota		Frequency : Twice Daily	
Flight No. 1.	Flight No. 2.	Flight No. 2.	Flight No. 1.
I. S. T.	I. S. T.	I. S. T.	I. S. T.
08.00	15.00	17.30	16.00
09.00	16.00	18.30	15.00

CALCUTTA-CHITTAGONG-RANGOON

Aircraft: Dakota

Frequency: Tues. Thur. Sat

07.00	Dep.	Calcutta	Arr.	18.00
08.30	Arr. }	Chittagong	{ Dep.	19.30
08.50	Dep. }		{ Arr.	16.05
11.50	Arr.	Rangoon	Dep.	13.15

CALCUTTA-CHITTAGONG-CALCUTTA

Mon. Wed. Fri. & Sun.	Tue. Thurs. & Sat.		
0700	0900	Dep.	Calcutta
0830	1030	Arr.	Chittagong
0900	1100	Dep.	Chittagong
1030	1230	Arr.	Calcutta

DACCA-CHITTAGONG-DACCA

Mon. Wed. Fri. & Sun.	Tue. Thurs. & Sat.		
1400	1000	Dep.	Dacca
1500	1100	Arr.	Chittagong
1530	1130	Dep.	Chittagong
1630	1230	Arr.	Dacca

CALCUTTA-CHITTAGONG-AKYAB-CHITTAGONG-CALCUTTA (DC-3), 5E & 6E

Days of operation—Monday, Wednesday, Friday & Sunday

5E		Dep.	Calcutta	Arr.	1800	6E
0900		Dep.	Chittagong	Dep.	1630	
1030		Arr.	Chittagong	Arr.	1600	
1190		Dep.	Akyab	Dep.	1500	
1200		Arr.				

KARACHI-LAHORE-RAWALPINDI-PESHAWAR-1P & 2P

Days of operation—Tuesday & Friday

1P		Dep.	Karachi	Arr.	2110	2P
0600		Arr.	Lahore	Dep.	1710	
0950		Dep.	Lahore	Arr.	1640	
1020		Arr.	Rawalpindi	Dep.	1530	
1135		Dep.	Rawalpindi	Arr.	1500	
1205		Arr.	Peshawar	Dep.	1415	
1255						

(1) KARACHI-DELHI-CALCUTTA-DACCA-DELHI-KARACHI

Twice weekly—Tuesday, Thursday & Saturday

Karachi	Dep.	04.00
Delhi	Arr.	07.00
Delhi	Dep.	07.40
Calcutta	Arr.	11.25
Calcutta	Dep.	12.10
Dacca	Arr.	13.05
Dacca	Dep.	13.45
Delhi	Arr.	17.55
Delhi	Dep.	18.35
Karachi	Arr.	21.40

(2) KARACHI-DELHI-DACCA-CALCUTTA-DELHI-KARACHI

Twice weekly—Monday, Wednesday & Friday

Karachi	Dep.	04.00
Delhi	Arr.	07.00
Delhi	Dep.	17.40
Dacca	Arr.	11.50
Dacca	Dep.	12.30
Calcutta	Arr.	13.25
Calcutta	Dep.	14.00
Delhi	Arr.	17.55
Delhi	Dep.	18.35
Karachi	Arr.	21.40

KARACHI-DELHI-DACCA-DELHI-KARACHI-(DC-3)

Days of operation—1D Sunday, 2D Monday

1D		Dep.	Karachi	Arr.	1930	2D
0430		Arr.	Delhi	Dep.	1500	
0850		Dep.	Delhi	Arr.	1415	
0900		Arr.	Dacca	Dep.	0815	
1515						

1D & 2D Service will operate subject to load being available.

Air France

PARIS-CALCUTTA-SAIGON

	AF 033	AF 035 A	AF 035 B	AF 039
	DC-4 1/7	DC-4 1/7	DC-4 1/7	L 749-1/7
Saigon	Dep. 1145 Fri.	0645 Wed.	0645 Mon.	0700 Sat.
Hanoi	Arr. 1530	—	—	—
Hanoi	Dep. 0815 Sat.	—	—	—
Calcutta	Arr. 1215	1135	1135	1010
Calcutta	Dep. 1315	1235	1235	1150
Karachi	Arr. 2035	1955	1955	1830
Karachi	Dep. 0630 Sun.	0630 Thur.	0630 Tue.	2030
Bahrein	Arr. 1030	1030	1030	—
Bahrein	Dep. 1130	1130	1130	—
Cairo	Arr. 1600	1600	1600	0320 Sun.
Cairo	Dep. 1710	1710	1710	0530
Rome	Arr. 2340	2340	—	—
Rome	Dep. 0040 Mon.	0040 Fri.	—	—
Marseilles	Arr. —	—	0155 Wed.	—
Marseilles	Dep. —	—	0305	—
Paris	Arr. 0500	0500	0540	1400

Paris	Dep.	1800	Thur.	1800	Mon. Sat.	1800	Thur.	1900	Wed.
Rome	Arr.	2205		2205		2205			
Rome	Dep.	2305		2305		2305			
Cairo	Arr.	0635	Fri.	0635	Tue. Sun.	0635	Fri.	0415	Thur.
Cairo	Dep.	0810		0810		0810		0545	
Bahrein	Arr.	1600		1600		1600			
Bahrein	Dep.	1700		1700		1700			
Karachi	Arr.	2320		2320		2320		1715	
Karachi	Dep.	1630	Sat.	1430	Wed. Mon.	1430	Sat.	1915	
Calcutta	Arr.	2340		2140		2140		0020	Fri.
Calcutta	Dep.	0040	Sun.	2240		2240		0145	
Hanoi	Arr.	1015							
Hanoi	Dep.	1115							
Saigon	Arr.	1500		0835	Thur. Tue.	0835	Sun	1040	

Air India International

BOMBAY—LONDON—BOMBAY

Aircraft: Constellation.

Frequency: Thrice Weekly.
Flight 104 and 105 Express
Service.

West Bound

101

103

105

		Tue.	GMT	LT	Fri.	GMT	LT	Sun.	GMT	LT
Bombay	Dep.		11.30	17.00		11.30	17.00		11.30	17.00
Basra	Arr.		19.00	22.00		19.00	22.00			
Basra	Dep.		20.10	23.10		20.10	23.10			
Cairo	Arr.	Wed.	00.40	02.40	Sat.	00.40	02.40		22.20	
Cairo	Dep.		01.55	03.55		01.55	03.55	Mon.	23.35	
Cairo	Arr.								00.20	
Cairo	Dep.								01.35	
Rome	Arr.								05.20	06.20
Rome	Dep.								06.35	07.35
Geneva	Arr.		10.05	11.05		10.05	11.05			
Geneva	Dep.		11.15	12.15		11.15	12.15			
London	Arr.		13.45	14.45		13.45	14.45		11.10	12.10

LONDON—BOMBAY

EAST BOUND

102

106

104

		Thur.	GMT	LT	Tue.	GMT	LT	Sun.	GMT	LT
London	Dep.		10.15	11.15		10.15	11.15		20.15	11.15
Geneva	Arr.		12.35	13.35		12.35	13.35			
Geneva	Dep.		13.45	14.45		13.45	14.45			
Rome	Arr.								14.30	15.30
Rome	Dep.								15.45	16.45
Cairo	Arr.		21.00	23.00		21.00	23.00		21.05	23.05
Cairo	Dep.		22.15		Wed.	22.15			22.15	
Cairo	Dep.	Fri.		00.15			00.15	Mon.		00.15
Bombay	Arr.		08.55	14.25		08.55	14.25		08.55	14.25

British Overseas Airways Corporation
ENGLAND—INDIA—CEYLON—MALAYA

FREQUENCY: 2 Weekly

B A 762 B A 770/2

Thur. Wed.

21.00 23.45

Fri. Thur.

00.50 03.35

02.20 05.05

08.50 11.35

10.50 13.05

18.10 20.25

19.40 22.55

Sat.

02.00

04.30

07.50

9.20

13.15

Fri.

06.55

03.25

13.00

Sat.

06.30

16.20

			Aircraft: Argonaut	
			B A 771/3	B A 763
Dep.	London	Arr.	15.10	17.45
Arr.	Rome	Dep.	10.50	13.25
Dep.	Rome	Arr.	08.50	11.55
Arr.	Cairo	Dep.	03.25	06.30
Dep.	Cairo	Arr.	01.55	04.30
		Tue.	22.15	Mon.
Arr.	Bahrein	Dep.	19.45	23.20
Dep.	Bahrein	Arr.		
Arr.	Karachi	Dep.		20.00
Dep.	Karachi	Arr.		17.30
Arr.	Delhi	Dep.		14.25
Dep.	Delhi	Arr.		12.55
Arr.	Calcutta	Dep.		09.00
		Sun.		
Arr.	Bombay	Dep.	14.40	
Dep.	Bombay	Arr.	13.10	
Arr.	Colombo	Dep.	08.30	
		Mon.	14.50	
Dep.	Colombo	Arr.	09.00	
Arr.	Singapore	Dep.		
		Sun.		

LONDON—TOKYO—LONDON

Aircraft: Argonaut
BA 907

Frequency: 2 Weekly

BA 906

Tue. Fri.

19.00

22.50

Wed. Sat.

00.20

06.50

08.50

14.20

15.50

Thu. Sun.

00.25

02.55

09.05

11.05

15.10

Fri. Mon.

07.00

09.25

10.55

17.55

Sat. Tue.

08.00

16.50

BA 960

Wed. Sun.

08.30

17.10

			arr.	
dep.	London	arr.	13.55	
dep.	Rome	dep.	09.35	
dep.	Rome	arr.	07.35	
dep.	Cairo	dep.	02.10	
dep.	Cairo	arr.	00.40	Thu. Sun.
dep.	Basra	dep.	21.00	
dep.	Basra	arr.	19.30	
dep.	Karachi	dep.	15.55	
dep.	Karachi	arr.	13.25	
dep.	Calcutta	dep.	07.00	Wed. Sat.
dep.	Calcutta	arr.	16.55	
dep.	Rangoon	dep.	14.40	
dep.	Rangoon	arr.	13.10	
dep.	Bangkok	dep.	11.40	
dep.	Bangkok	arr.	10.10	
dep.	Hongkong	dep.	07.00	Tue. Fri.
dep.	Hongkong	arr.	14.55	
dep.	Shanghai	dep.		
dep.	Shanghai	arr.		
dep.	Tokyo	dep.	07.00	Mon. Thu.
		arr.		BA 961
dep.	Singapore	arr.	14.50	
dep.	Hongkong	dep.	09.00	Tues. Sat.

British Overseas Airways Corporation (Continued)
ENGLAND—INDIA—CEYLON—AUSTRALIA

Days	L. T.	Days	L. T.	Days	L. T.	Days	L. T.	Days	L. T.	Days	L. T.
Thu.	19.00	Wed.	09.45	London	arr.	17.20	16.00				
Fri.	23.15		13.45	Rome	dep.	12.45	11.10				
	00.45		15.15	Rome	arr.	10.45	09.10				
	07.25		21.45	Cairo	dep.	05.45	03.50				
	08.25		13.00	Cairo	arr.	15.00	02.20	Tue.			
	16.20		—	Bahrein	dep.	—	22.40				
	17.50		—	Bahrein	arr.	—	20.10				
Sat.	23.30		01.30	Karachi	dep.	08.30	—				Mon.
	02.00		04.00	Karachi	arr.	20.45	—				
	05.00		—	Delhi	dep.	—	—				
	06.30		—	Delhi	arr.	—	—				
	10.10		—	Calcutta	dep.	—	—				
			06.30	Bombay	dep.	13.15	14.35				Sun.
			17.55	Bombay	arr.	16.45	13.05				
			22.25	Colombo	dep.	12.45	08.30	Mon.			
			00.01	Colombo	arr.	11.15	14.30				
			09.40	Singapore	dep.	06.00	09.00	Sun.			
				Singapore	arr.	14.00					
				Darwin	dep.	07.30					
				Darwin	arr.	05.15					
				Sydney	dep.	21.30					

Himalayan Aviation Limited

PASSENGER	CALCUTTA	NAGPUR	BOMBAY	DELHI	MADRAS
	Rs.	Rs.	Rs.	Rs.	Rs.
Calcutta	—	99	172	126	145
Nagpur	99	—	73	96	96
Bombay	172	73	—	118	112
Delhi	126	96	118	—	191
Madras	145	96	112	191	—

Freight & Ex. Baggage Per Lb.

Calcutta	—	0 10	0 14	1 0	1 0
Nagpur	0 10	—	0 8	0 9	0 10
Bombay	0 14	0 8	—	0 12	0 10
Delhi	1 0	0 9	0 12	—	1 3
Madras	1 0	0 10	0 10	1 3	—

SERVICE	DELHI	NAGPUR	MADRAS
HOURS	SOUTH BOUND	NORTH BOUND	HOURS
23.15	Dep. Delhi	Arr.	06.55
02.30	Arr. Nagpur	Dep.	03.25
03.20	Dep. Nagpur	Arr.	02.45
07.05	Arr. Madras	Dep.	23.00

SERVICE	CALCUTTA	NAGPUR	BOMBAY
HOURS	WEST BOUND	EAST BOUND	HOURS
23.00	Dep. Calcutta	Arr.	07.15
03.00	Arr. Nagpur	Dep.	03.15
03.30	Dep. Nagpur	Arr.	02.30
06.20	Arr. Bombay	Dep.	23.40

Scandinavian Air Lines

Aircraft : DC.6

	L.S.T.	ASIA—EUROPE	L.S.T.
Saturday	08.00	Dep. Bangkok	Arr. 11.00
	11.05	Arr. Calcutta	Dep. 05.10
	12.20	Dep. Calcutta	Arr. 03.40 Thursday
	18.30	Arr. Karachi	Dep. 22.30
	20.00	Dep. Karachi	Arr. 20.30
Sunday	02.40	Arr. Lydda	Dep. 10.00
	03.55	Dep. Lydda	Arr. 08.25
	08.35	Arr. Rome	Dep. 00.30 Wednesday
	09.50	Dep. Rome	Arr. 22.40
	12.10	Arr. Zurich	Dep. 20.30
	13.10	Dep. Zurich	Arr. 19.15
	14.25	Arr. Frankfurt	Dep. 18.00
	15.25	Dep. Frankfurt	Arr. 16.40
	17.25	Arr. Copenhagen	Dep. 14.25
	18.15	Dep. Copenhagen	Arr. 13.25
	19.50	Arr. Stockholm	Dep. 11.40 Tuesday

SIAMESE AIRWAYS LTD.**BANGKOK—RANGOON—CALCUTTA**

FRI.				SAT.
0755	Dep.	Bangkok	Arr.	1515
0940	Dep.	Rangoon	Dep.	1230
1030	Arr.	Rangoon	Arr.	1130
1330	Arr.	Calcutta	Dep.	0630

Calcutta to:		
Bangkok	Rs. 300	Excess Baggage
Hongkong	Rs. 625	1.50
Rangoon	Rs. 200	3.15
		2.20

Braathens S. A. F. E. Air-transport A/S.**OSLO—HONGKONG—OSLO**

East Bound			West Bound		
		L. S. T.			L. S.
Oslo	dep.	07.30	Hongkong	dep.	Fr 09.00
Stavanger	arr.	09.00	Bangkok	arr.	14.00
Stavanger	dep.	10.00			Sat
Amsterdam	arr.	13.00	Bangkok	dep.	06.00
Amsterdam	dep.	14.30	Calcutta	arr.	10.30
Geneva	arr.	17.00	Calcutta	dep.	11.30
Geneva	dep.	18.00	Bombay	arr.	17.30
Rome	arr.	21.30	Bombay	dep.	18.30
		Sun.	Karachi	arr.	22.00
Rome	dep.	08.00			Sat
Athens	arr.	12.30	Karachi	dep.	07.00
Athens	dep.	13.30	Abadan	arr.	12.00
Cairo	arr.	17.00	Abadan	dep.	13.00
		Mon.	Cairo	arr.	17.30
Cairo	dep.	06.00			Mon
Abadan	arr.	12.00	Cairo	dep.	08.00
Abadan	dep.	13.00	Athens	arr.	11.30
Karachi	arr.	22.30	Athens	dep.	12.30
		Tue.	Rome (Night stop)	arr.	15.00
Karachi	dep.	06.00	Rome	dep.	07.00
Bombay	arr.	09.30	Geneva	arr.	10.30
Bombay	dep.	10.30	Geneva	dep.	11.30
Calcutta	arr.	16.00	Amsterdam	arr.	14.00
Calcutta	dep.	17.00	Amsterdam	dep.	15.30
		Wed.	Stavanger	arr.	18.30
Bangkok	arr.	00.01			Tue.
Bangkok	dep.	09.00	Stavanger	dep.	20.00
Hongkong	arr.	16.00	Oslo	arr.	21.30