the Berlin Meteorological Institute

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Abstract

Among the agencies concerned with meteorology, the Meteorological-Geophysical Institute of West-Berlin (Institut für Meteorologie und Geophysik der Freien Universität Berlin) plays a unique role, because it is the only institution in the meteorological field engaged in all three facets of such a scientific program: research, education, and operational activities in the weather service of West-Berlin. This is a result of the special situation of West-Berlin. In order to understand this feature, a brief history of the meteorological activities in Berlin is described.

1. Brief history of old Berlin meteorology

As early as 1847, a meteorological division had been established in the Berlin Bureau of Statistics. This agency was also the first to begin collecting weather reports and issuing storm warnings for the Prussian coastal regions in 1861. Bismarck, however, was convinced that wrong forecasts published by a governmental agency would not be to the benefit of the Prussian government, and thus a commission, headed by Prof. Dove in Berlin, decided in 1873 to charge the Deutsche Seewarte in Hamburg with the storm warning service. The Berlin Weather Bureau was not established until 1884, and Prof. Hellmann, the famous director of the Institute, was such an exacting scientist that he did not approve of weather forecasting. Thus, this practical field of meteorology did not play an important role in Berlin until my teacher, Prof. v. Ficker, became director of the Meteorological Institute of the Berlin University in 1923, the Institute having been given the responsibility for operating the weather service. When the German Reichswetterdienst and the Reichsamt für Wetterdienst were established in 1934, the Air Field Weather Station at Berlin-Tempelhof took charge of the Berlin weather service.

2. Meteorology in post-war Berlin

After world war II the U. S. Air Force immediately established an Air Weather Service at the Tempelhof Air Base in 1945. According to a Four Power Agreement, the Potsdam Observatory was responsible for the economic weather service in West-Berlin. The Meteorological Institute—formerly situated in the city of Berlin—was completely destroyed. Prof. Ertel, a well-known scientist, became chief of this institute which by that time was situated in a small barracks in Dahlem. Because Berlin was divided, this institution was taken over by the Free University on 25 August 1949. As Prof. Ertel preferred to establish a new Meteorological Institute in East-Berlin, I was offered the job of reorganizing an Institute for Meteorology and Geophysics in West-Berlin. Since the territories of Western Germany were not in a position to create their own substitute for the Berlin Weather Service, Prof. Weickmann, the president of the Weather Service in the U. S. Zone, agreed that the Free University of West-Berlin should try to organize a special weather service for West-Berlin. For this purpose a regulation introduced by the U. S. element in post war politics became a decisive factor, i.e., the costs involved in preparing all official forecasts issued by the Weather Service had to be paid for in a proportion use basis. As a result, one-fifth of the income resulting from the distribution of weather forecasts by the telephone system is paid by the Post Office to the Weather Service.

3. The West-Berlin telephone weather system

The economic system introduced by the U. S. Government in Germany offered the possibility for building a major Meteorological Institute in Berlin. Soon we began issuing very extensive weather reports and forecasts through the Berlin telephone lines (phone 1164). The reports contain many meteorological observations such as tempera-

ture, pressure, relative humidity, dew point, wind direction and speed, visibility, brightness, global radiation, counts of spherics, precipitation, snow cover, etc. In addition, the current radar situation is explained and a forecast is made of the movement of the storm echoes for the next few hours. The main features of the pressure pattern over Europe are explained, and a forecast for the current and the following day is given. Finally, observations from the main airport weather stations in West Germany are summarized. The whole report requires 3 minutes and is given every hour by female observers of the Institute specially trained for this work. Another three-hourly report (phone 1160) concerns the weather in the recreation centers and at the main airports of Europe, and New York City. In winter time, another report (phone 1169) concerns weather conditions on the main Autobahnen to and in Western Germany. About 2,000,000 people listened to these weather reports last year, resulting in a yearly income of 100,000 DM. Since the Post Office also earns 400,000 DM yearly from these weather reports, the fiscal government earns about 500,000 DM from the Weather Service of West-Berlin per year.

4. The development of the West-Berlin Meteorological Institute

When we began to work at the West-Berlin Meteorological Institute in December 1949 we were a staff of only five people paid by the Free University. The only additional income that month amounted to 100 DM contributed by the Western Berlin newspaper "Der Tagesspiegel." As of this writing, this newspaper is the only one I know which is regularly publishing the current and the forecast weather map, an example of which is shown in Fig. 1.* Even the radio station in the American sector of Berlin (RIAS) was not pleased to have to change from the eastern to the western weather service in May 1950 and to pay West-Marks instead of East-Marks. Unfortunately, a lot of the forecasts issued in May 1950 were wrong, because Berlin weather is especially unsettled in the transition period between spring and summer and there was only one poor teletype connection to the Tempelhof Air Weather Station. It was the U. S. Air Weather Service which donated the first radio receiver to the Institute. But with the increasing income it became possible to obtain good technical equipment and to hire additional personnel. The Free University supported us in many respects because of the publicity accorded the Institute.

5. The Berlin phenomenon

This publicity proved very valuable when the U. S. Air Force decided in 1955 to deliver their Berlin radiosonde station to the German Weather Service. Although the "Berlin Phenomenon," the first sudden stratospheric warming, was discovered by this station on 22 February 1952, the German weather service was unable to continue this series of radiosonde ascents. At this critical moment the deputies of the Berlin Parliament granted a first budget of 100,000 DM to continue these ascents. The Institute took over this station in 1956. The Free University built a balloon shelter (Fig. 1a) big enough for 4400-gm (Kaysam) balloons, so that today we have one of the longest continuing series of high reaching radio ascents. The greatest height reached was 51,785 m (169,898 ft) on 28 May 1968.

6. The present state of the Institute

The Institute for Meteorology and Geophysics now comprises 11 working groups. The first division, headed by Mr. Klauser, is concerned with the daily weather service. The Analysis Group (Dr. Geb) performs daily circumpolar analyses of the surface, 850-, and 300-mb surfaces as well as special analyses for the European regions. The Stratospheric Group (Mrs. Dr. Labitzke) is responsible for all stratospheric research work and the daily analyses of the 100-, 50-, 30-, and 10-mb surfaces, and the Mesospheric Group (Dr. Warnecke) for the upper stratosphere and mesosphere. A special Satellite Division (Mrs. Dr. Haupt) was established by the Volkswagen Foundation which donated 2,000,000 DM for a very capable antenna to receive satellite observations. The Aerological Division (Dr. Pantzke) is concerned with radiosonde and ozonesonde ascents, calculated and coded by a computer since 1967. Four other groups are working on radiation problems (Prof. Feußner), radioactivity (Dr. Burger), radar meteorology (Dr. Hoffmann), and biometeorology (Dipl.-Ing. Wedler), the latter also having originated an automatic weather station which records and calculates 32 individual meteorological parameters. The geophysical division is headed by Prof. Strobach, an expert on the

* The weather report of "Der Tagesspiegel" from June 1968.

Wetterbericht des Instituts für Meteorologie der FU

ÜBERSICHT: Von der Nordsee bis zum Ural erstreckt sich zur Zeit eine stabile Hochdruckzone. Die Hochzelle Hadrian bei Stockholm wird das Pfingstwetter in weiten Teilen Mitteleuropas bestimmen. Es kann im größten Teil Deutschlands überwiegend sonniges Wetter erwartet werden mit Tageshöchsttemperaturen zwischen 18 und 24 Grad. Am Sonnabend herrschte zwar noch im östlichen Bayern unbeständiges Wetter, doch das diese Erscheinungen hervorrufofende Höhenkältegebiet verlagert sich rasch weiter nach Süden, so daß auch in Bayern überwiegend freundliches Wetter eintreten wird. Das beste Wetter behalten dabei immer noch die Seebäder an der Nord- und Ostseeküste.

BEOBACHTUNGEN um 14 Uhr (1. 6.): Heiter; Temperatur: 19,7°; Feuchte: 42 %; Luftdruck: 1023,6 mb; Niederschlag: 0,0 mm.

VORHERSAGE bis Mittwoch früh: Am 1. und 2. Pfingstfeiertag überwiegend sonnig, nur zeitweise wolkg, trocken, Mittagstemperaturen etwas über 20 Grad. Mäßiger, zeitweise stark böig auffrischender Wind aus Nordost bis Ost. Tiefste Temperaturen nachts um 10 Grad. Relative Luftfeuchtigkeit 80 bis 40 %.

Sonntag: Sonnenaufgang: 3.50 Uhr; Sonnenuntergang: 20.19 Uhr.
Mondaufgang: 9.09 Uhr; Monduntergang: 0.36 Uhr.

Montag: Sonnenaufgang: 3.49 Uhr; Sonnenuntergang: 20.20 Uhr.
Mondaufgang: 10.30 Uhr; Monduntergang: 0.52 Uhr.

Dienstag: Sonnenaufgang: 3.48 Uhr; Sonnenuntergang: 20.21 Uhr.
Mondaufgang: 11.52 Uhr; Monduntergang: 1.04 Uhr.

REISEWETTER
(Sonnabend, 10 Uhr)

Westerland:	heiter 17°
Norderney:	heiter 16°
Travemünde:	wolkenlos 16°
Soltau:	wolkenlos 18°
Bad Salzungen:	heiter 18°
Braunlage:	heiter 15°
Hof:	heiter 13°
Bad Kissingen:	heiter 17°
Friedrichshafen:	heiter 16°
Freiburg i. Br.:	heiter 17°
Saarbrücken:	wolkenlos 16°

Frankfurt a. M.:	heiter 18°
Koblenz:	heiter 19°
Garmisch:	Sprühregen 9°
Stuttgart:	heiter 16°
Bamberg:	heiter 16°
Passau:	wolkg 13°
Salzburg:	Regen 10°
Wien:	wolkg 14°
Klagenfurt:	heiter 16°
Innsbruck:	Regenschauer 12°
Amsterdam:	heiter 20°
Stockholm:	heiter 20°
Bornholm:	wolkenlos 15°

Kopenhagen:	heiter 16°
London:	heiter 17°
Paris:	heiter 20°
Bordeaux:	heiter 20°
Zürich:	heiter 15°
Bozen:	trübe 12°
Nizza:	—
Venedig:	wolkg 15°
Rom:	wolkg 19°
Neapel:	heiter 21°
Mallorca:	heiter 22°
Madrid:	wolkg 18°
Athen:	heiter 24°

Fig. 1

field of microseismisms, and a few years ago a separate Institute for Theoretical Meteorology was founded, with Prof. Fortak, one of the leading theoreticians in Germany, as director. Finally, it seems worthwhile mentioning that many of the abovenamed scientists, i.e., Mrs. Haupt, Mrs. Labitzke, Prof. Fortak, Prof. Strobach and Dr. Warnecke, have spent some time in the United States to study the newest developments in modern meteorology. The whole staff comprises about 130 people, 30 of whom are scientists.

7. Education in meteorology

There are about 100 students participating in courses dealing with meteorology and geophysics at the Free University of Berlin. About 10 of them will get the diploma degree in the current year, and about 5 the doctorate. Dr. Clauß is especially concerned with training courses in meteorology. According to future regulations in Germany 4 years are needed to get the diploma degree. All students of meteorology have the opportunity to work part time in the Institute, and thus are trained in all fields of practical weather service. They begin their work in the radio station, perform analyses of many types, and study many problems of theoretical meteorology.

8. The publications

The technical facilities of the Institute are excellent. The radar set, for instance, comprises a Decca 43, x-band type radar of 3.2-cm wavelength with PPI and HRI indicators. Scope photographs are taken every hour, day and night. Cloud heights are measured by radar and a ceilometer, and the direction of occurring lightning strokes by a direction finder. There are five special lines connecting the Institute with the German Weather Center at Offenbach. Furthermore, seven complete sets of radio receivers are available for receiving additional weather information from the upper atmosphere, from the Pacific, and from the Southern Hemisphere. There are already published 90 volumes of the "Meteorologische Abhandlungen" containing about four numbers each. These publications contain complete series of upper air and surface maps, and about 80 numbers are devoted to special meteorological problems. All these publications are printed at the Institute.

9. The Berlin weather map

During the last few years much work has been devoted to improve the "Berliner Wetterkarte," published since 1952. A sample of this map, containing 20 pages, follows.* It contains, on page 1 (Fig. 2), the 500-mb and surface weather maps of the Atlantic and European regions. Page 2 (Fig. 3) concerns central Europe and contains a summary of the weather situation and the forecasts. Page 11 (Fig. 4) lists the temperature extremes, the duration of sunshine, the snow cover, and the water temperatures measured in Germany. Pages 4 and 5 (Fig. 5) contain a circumpolar surface map, pages 3 and 6 (Fig. 6) the circumpolar 850-mb map, page 12 the circumpolar 300-mb map (Fig. 7) together with the three-hourly observations of a few important meteorological stations, and pages 13–16 (Figs. 8–11) the respective 100-, 50-, 30-, and 10-mb maps. On pages 8 and 9 (Fig. 12)

* The original maps are printed in three different colors—green, black, and the isotherms at the 100 and 50 mb maps in red. The scale of the 850 and surface Northern Hemisphere maps is 1:75,000,000, the other maps are only reduced to a small extent.

FIG. 1a. A 4400-gm Kaysam balloon in the shelter of the Berlin Meteorological Institute situated on the Tempelhof Air Base.

Berliner Wetterkarte

Telefon 0311 (Berlin)
Versand 76 90 788
Wetterdienst 76 90 727
76 53 18/19
Fernschreiber 018 3188

Amtsblatt des Instituts für Meteorologie und Geophysik
der Freien Universität Berlin
1000 Berlin 33 (Dahlem), Podbielskiallee 62
Postscheckkonto Berlin-West 22 808, Kasse der Freien Universität

A 20 146 A

Erscheint täglich
Bezugspreis 5,- DM monatl.
zuzügl. Postzustellgebühr

17-154

Sonntag, 2.6.1968

Maßstab 1 : 7 500 000

[illegible][illegible]

VORHERSAGE für Berlin und die weitere Umgebung bis Mittwoch früh: Bei mäßigem bis frischem Wind aus Ost bis Süd Wechsel von kurzen Auf-
 heiterungen mit starker Bewölkung, einzelne, z.T. gewittrige Schauer. Unverändert schwül-warm. Tageshöchsttemperatur 23°, Tiefsttemperatur nachts kaum
 unter 15°. Relative Luftfeuchtigkeit zwischen 55 und 97%.

Heise/Lh.

* Quecksilberthermometer

807

Gestrige Höchst- und nächtliche Tiefsttemperaturen in °C

24-stündige Niederschlagsmengen in mm, gemessen um 7 Uhr

Gestrige Sonnenscheindauer in Stunden

Höhe der Schneedecke in cm und Wasseranfangsdruck in hPa, um 7 Uhr

FIG. 4

FIG. 5

FIG. 6

300 mb
Eintragung ...
Sm Gw Kr

[illegible]

FIG. 8

FIG. 9

FIG. 10

FIG. 11

FIG. 12

Berliner Messwerte

1./2.6.1968

FIG. 13

FIG. 14

FIG. 15

FIG. 16

aufstieg nr. 4457 2.6.68 05.23-07.13 gmt typ mic 1093

druckstufen	windkomponenten	peilwerte	windprofil
164 1000.0 13.6 7.3 66 80 10 5 31 316.9	1.2102 340.12	boden -1.2 -2.4	40 152.6 46 64 2.7
596 950.0 13.4 8.6 73 101 18 9 38 308.0	1.1498 340.11	1000 -1.8 -4.9	40.0 84.3 277 96 7.2
1050 900.0 10.2 6.1 76 105 24 12 37 290.1	1.1021 338.12	950 -1.8 -9.1	32.4 92.2 481 100 8.5
1523 850.0 7.3 -1.0 56 107 28 14 32 262.2	1.0533 336.12	800 3.3 -11.9	25.4 98.4 589 103 9.9
2019 800.0 3.4 -1.8 74 109 29 15 34 252.5	1.0052 333.40	750 4.1 -13.6	22.5 101.5 877 105 11.3
2019 800.0 3.4 -1.8 74 109 29 15 34 252.5	1.0052 333.40	700 4.8 -13.3	20.3 102.8 1066 106 12.5
3081 700.0 -3.2 224.6 97 114 26 13 37 224.6	1.0344 329.35	600 6.2 -13.7	18.9 103.3 1255 106 13.4
4290 600.0 -11.0 -15.0 72 120 27 14 36 188.0	1.7262 329.30	500 6.9 -12.0	17.9 103.7 1461 107 14.1
5667 500.0 -20.2 -25.9 61 121 33 17 38 157.7	1.6883 318.82	400 8.6 -14.4	17.2 104.1 1683 108 14.5
7277 400.0 -33.4 -40.4 49 120 41 21 39 130.6	1.5811 310.42	300 10.5 -18.5	16.6 104.6 1905 109 14.7
9227 300.0 -51.2 -57.8 37 120 44 23 43 104.2	1.4669 299.30	200 11.4 -19.8	16.3 105.2 2126 110 14.8
10407 250.0 -53.1 -62.7 30 124 36 19 54 85.26	1.3957 297.38	100 10.3 -15.4	16.0 105.8 2348 111 14.8
11086 225.0 -51.4 -61.9 27 126 31 16 67 78.84	1.3534 299.54	225 9.5 -13.0	15.9 106.4 2569 112 14.9
11850 200.0 -52.2 -63.6 24 129 26 13 77 70.33	1.3152 297.39	200 8.5 -10.3	15.8 107.0 2805 113 15.0
13708 150.0 -54.0 -66.3 21 143 13 7 104 53.18	1.2384 296.75	150 5.5 -4.2	15.7 107.6 3044 114 15.0
16304 100.0 -55.0 -67.6 20 141 8 4 148 35.63	1.1571 296.07	100 3.1 -2.0	15.6 108.1 3281 115 15.0
17729 80.0 -54.7 -67.5 19 134 7 4 177 28.47	1.1085 297.34	70 2.6 -2.8	15.5 108.6 3518 116 14.7
18538 70.0 -53.2 -66.2 19 132 8 4 197 24.76	1.1085 297.34	70 2.6 -3.1	15.4 109.2 3756 118 14.4
19581 60.0 -53.1 -66.2 19 131 9 5 219 21.22	1.0948 297.39	60 3.1 -3.5	15.5 109.7 3997 119 14.0
20757 50.0 -53.0 -66.1 19 121 11 5 245 17.69	1.0791 297.45	50 2.8 -4.7	15.6 110.3 4233 120 13.8
22204 40.0 -51.6 106 16 7 282 14.01	1.0628 297.41	40 2.1 -7.1	15.6 110.9 4482 121 13.8
24075 30.0 -49.9 97 18 9 334 10.43	1.0462 299.50	30 1.1 -9.4	15.7 111.4 4724 121 14.1
25271 25.0 -48.3 96 18 9 371 8.627	1.0387 300.61	25 1.0 -9.2	15.8 111.9 4967 121 14.6
26747 20.0 -46.3 98 17 9 420 6.840	1.0307 301.96	20 1.1 -8.6	15.8 112.3 5223 121 15.3
28673 15.0 -42.8 94 20 10 491 5.054	1.0226 304.23	15 1.8 -10.4	15.8 112.7 5488 121 16.2
31439 10.0 -37.5 95 25 13 605 3.292	1.0147 307.76	10 1.4 -12.7	15.7 113.1 5752 121 17.1
33007 8.0 -28.4 100 26 13 698 2.536	1.0113 312.62	8 2.4 -13.2	15.6 113.5 6021 121 18.0
33967 7.0 -27.2 105 27 14 741 2.208	1.0091 314.32	7 3.6 -13.4	15.6 113.9 6288 121 18.8
35081 6.0 -25.9 106 27 14 793 1.832	1.0084 315.28	6 3.8 -13.3	15.5 114.2 6555 120 19.7
36412 5.0 -25.0 106 27 14 868 1.543	1.0069 317.85	5 2.6 -12.6	15.3 114.5 6821 120 20.4
38071 4.0 -16.8 96 25 13 967 1.211	1.0044 320.97	4 1.4 -12.7	15.1 114.7 7103 120 21.0
40257 3.0 -10.4 99 30 15 107 1.886	1.0038 324.95	3 2.4 -15.2	15.0 115.1 7400 119 21.5
41670 2.500 -6.4 105 32 16 203 1.727	1.0026 327.44	2.5 4.2 -15.3	14.9 115.2 7690 119 22.0
43423 2.000 -4.2 109 32 16 312 1.577	1.0025 328.73	2 5.2 -15.5	14.8 115.4 7981 119 22.5
45691 1.500 -3.7 107 34 17 452 1.432	1.0019 329.06	1.5 5.1 -16.5	14.7 115.5 8271 118 23.0
			14.5 115.6 8562 119 23.4
			14.4 115.7 8852 119 23.4
			14.3 115.8 9181 120 22.9
			14.2 116.0 9518 121 21.9
			14.1 116.1 9834 122 20.5
			14.0 116.4 10331 124 18.9
			13.9 116.6 10822 125 17.1
			13.8 116.8 11338 127 15.2
			13.7 117.1 11860 129 13.3
			13.6 117.3 12369 132 11.4
			13.5 117.5 12876 135 9.6
			13.4 117.8 13374 139 8.0
			13.3 118.0 13799 144 6.6
			13.2 118.2 14224 147 5.6
			13.1 118.5 14648 149 5.9
			13.0 118.6 15073 150 4.5
			12.9 118.8 15498 150 4.1
			12.8 118.9 15922 149 3.9
			12.7 119.1 16347 147 3.7
			12.6 119.3 16772 143 3.6
			12.5 119.4 17196 138 3.6
			12.4 119.4 17609 134 3.7
			12.3 119.4 17991 132 3.9
			12.2 119.5 18400 132 4.2
			12.1 119.5 18829 133 4.5
			12.0 119.6 19257 132 4.5
			11.9 119.7 19686 131 4.7
			11.8 119.8 20114 128 5.0
			11.7 119.9 20543 123 5.3
			11.6 119.9 20972 119 5.6
			11.5 119.9 21343 114 6.1
			11.4 119.8 21734 110 6.7
			11.3 119.7 22157 107 7.4
			11.2 119.6 22586 104 8.0
			11.1 119.4 23054 101 8.6
			11.0 119.2 23524 99 9.1
			10.9 119.0 23993 97 9.4
			10.8 118.7 24463 96 9.5
			10.7 118.4 24933 96 9.4
			10.6 118.2 25403 96 9.2
			10.5 117.9 25872 97 8.9
			10.4 117.6 26342 97 8.7
			10.3 117.6 26812 98 8.7
			10.2 117.4 27282 97 8.9
			10.1 117.3 27791 96 9.2
			10.0 117.1 28310 95 9.9
			9.9 116.8 28829 94 10.7
			9.8 116.6 29348 93 11.5
			9.7 116.3 29867 92 12.2
			9.6 116.0 30386 91 12.8
			9.5 115.6 30905 90 13.0
			9.4 115.3 31423 91 13.1
			9.3 114.9 31950 93 13.1
			9.2 114.6 32477 96 13.2
			9.1 114.4 33008 100 13.4
			9.0 114.2 33569 104 13.7
			8.9 114.2 34129 106 14.0
			8.8 114.2 34689 106 14.1
			8.7 114.1 35268 105 13.8
			8.6 114.0 35866 104 13.3
			8.5 113.8 36495 101 12.8
			8.4 113.7 37124 99 12.5
			8.3 113.5 37743 97 12.6
			8.2 113.3 38362 96 13.0
			8.1 113.1 38981 96 13.8
			8.0 112.8 39600 97 14.6
			7.9 112.6 40219 99 15.3
			7.8 112.5 40838 101 16.0
			7.7 112.3 41457 104 16.4
			7.6 112.2 42076 106 16.6
			7.5 112.2 42772 108 16.5
			7.4 112.2 43519 109 16.3
			7.3 112.2 44266 109 16.3
			7.2 112.1 45013 108 16.6
			7.1 112.1 45760 107 17.3
			7.0 112.0 46508 107 18.2

Fig. 17

are published a mosaic of the ESSA satellite pictures of the same day from the European-Atlantic region, and, as far as I know, this is the only satellite picture which is printed on a daily routine basis. Pages 17–20 (Figs. 13–16) contain the records and the evaluation of all the meteorological parameters measured at the Institute, and another special page (Fig. 17) gives the results of the electronically computed radiosondes ascents. Furthermore, supplements are published on such topics as the results of ozonesondes ascent, and special attention is given to the climatological monthly means from the surface to the 30-mb layer over the whole Earth, all these maps being printed as soon as possible. Finally, it seems worthwhile mentioning that all the maps are also printed and mailed every Sunday, and Christmas, so that people interested in the real weather situation like myself will never miss the maps. There is no question that this is the most comprehensive weather map ever published.

news and notes

ESSA deputy administrator named

President Johnson announced in June his intention to nominate Dr. John W. Townsend, Jr., as deputy administrator of the Environmental Science Services Administration. He succeeds Dr. Werner A. Baum, who has accepted the presidency of the University of Rhode Island. Dr. Townsend, deputy director of the National Aeronautics and Space Administration's Goddard Space Flight Center at

Greenbelt, Md., is widely known as a scientific administrator and ionospheric physicist, whose contribution to the nation's satellite program has been notable. His nomination to the ESSA post was confirmed by the Senate in late June.

Dr. Townsend was born in March 1924 in Washington, D. C. During World War II he served as an Air Force officer, with overseas duty at Guam, Tinian, and the Philippine Islands. He graduated from Williams College in 1947, *cum laude* and with highest honors in physics. He received his master's degree in physics from Williams in 1949 and an honorary Sc.D. from that institution in 1961.

Having joined the Naval Research Laboratory's Radio Division in 1949, he became head of the Rocketsonde Branch and deputy science program coordinator of Project Vanguard in 1955. During his service with the NRL, he participated in programs of basic research in the very high atmosphere. He developed a radio frequency mass spectrometer for use in rockets and obtained the first mass spectra of the upper atmosphere above 90 km. As deputy science program

coordinator for Project Vanguard he directed preparation of scientific instrumentation for two of the four approved original Earth satellites. He was also scientific officer for the Navy's development of the Aerobee-Hi rocket.

In 1958 Dr. Townsend transferred to NASA and was appointed chief of the Space Sciences Division. The following year he became assistant director of Goddard Space Flight Center and was named deputy director in July 1965. He was a member of the team that created Goddard Space Flight Center through the transfer of several agencies to the new NASA. At Goddard he planned, directed, and conducted a broad program of space research. He has been responsible for the day-to-day management of most of NASA's scientific and applications satellites, operation of its global tracking and data acquisition network for unmanned satellites, and the manned Gemini and Apollo spacecraft. He has directed field groups at Cape Kennedy and the Pacific Missile Range that were responsible for the launching of all NASA's Delta, Thor-Agena, Atlas-Agena, and Centaur vehicles, and has supervised the Goddard Institute for Space Studies in New York.

Among his honors have been the Professional Achievement Award, Engineers' and Architects' Day, 1957; the Navy's Meritorious Civilian Service Award, 1957; and the NASA Medal for Outstanding Leadership, 1962. He received the Arthur S. Flemming Award as one of the Ten Outstanding Young Men in the Federal Service in 1963.

He has published widely in his field and is a member of numerous scientific and professional societies, including the American Meteorological Society. He is a private pilot and amateur radio operator and for five years served as president of the Town Council of Forest Heights, Md.

In his new position he serves under the direction of Dr. Robert M. White, ESSA administrator.

(More news and notes on page 829)