Irish Meteorological Society

Newsletter

Number 20 **February 1990**

Contents:

REMINDER!

Some subscriptions for 1990 are still outstanding. TheTreasurer would be grateful if these could be forwarded as soon as possible; £8 for the Dublin area and £4 elsewhere.

A.Kelly

Secretary

An excerpt from the lecture given to the Society and to the Solar Energy Society of Ireland by Mr. Seamus Doyle of the Commissioners for Irish Lights in Trinity College, Dublin on Jan. 19th 1990 on the subject of Renewable Energy Systems.

Further excerpts on Solar and Wind Generators will follow.

Wave Activated Generators

1 Wave activated generators are used on buoys where the power consumption of the optic system is high or where fog signals are used. The basic type of wave generator used is Japanese TG2 generator.

This generator consists of a 3 phase 70 watt generator driven by a unidirectional turbine. As the buoy plunges in the water a column of air in the tail tube is pushed and sucked through the wave generator. A system of flap valves rectify this air flow into a unidirectional airstream through the turbine. The output from the turbine is rectified and regulated to provide a 12V charging supply for the 12V batteries.

2 When first installed Nickel Cadmium batteries were used on the wave activated generator buoys. These were metal cased batteries. Considerable expense and difficulty was experienced because of corrosion in the metal cases and because of the effort required to test the batteries at each 2 year overhaul. As a result AC Delco 1301 automotive lead acid batteries are now used with the WAG units.

3 The equipment is fitted on the WAG buoys as shown in Fig. 11. The lantern is mounted on top with a radar reflector immediately below. Fog Signal is then mounted in the daymark with the WAG generator on top of the tail tube. The batteries are mounted in two pockets in the body of the buoy.

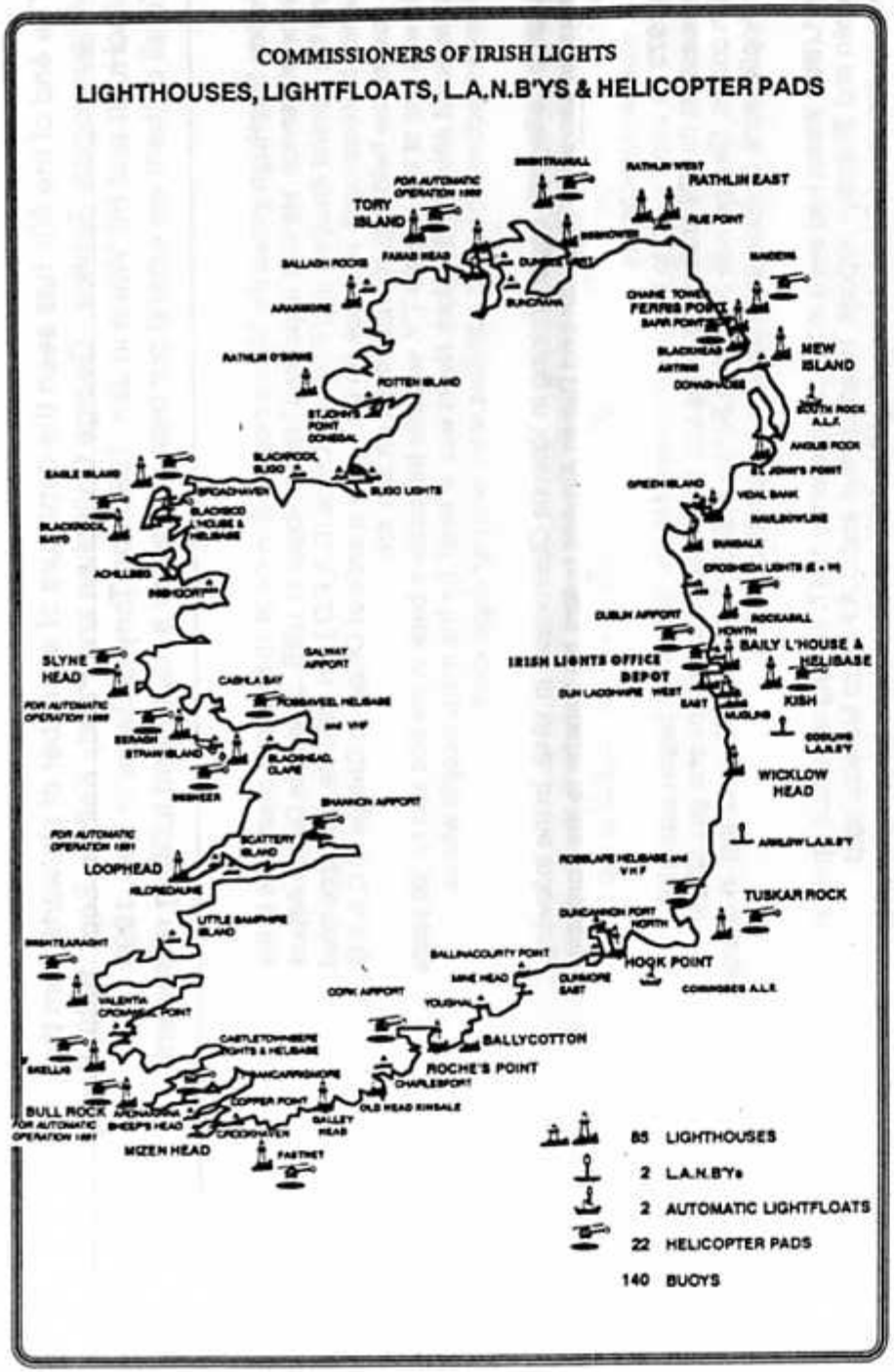
The WAG generator has a built in ammeter indicating charge current. This is the only inbuilt monitoring. On maintenance visits Technicians carry a test unit which can be plugged in in place of the lantern to test the onload voltage of the battery. This has been found to be satisfactory method of operating.

4 The buoys are replaced on a two year cycle. During the two years the buoy is expected to operate totally unattended. Faults experienced with these systems have been as follows:

Voltage regulator.
Bad plug/socket connections.
Water leaks in generator alternator.
Paint flaking off the aluminium bodies.
Water leaks in junction box.

The faults in the electronic voltage regulators have been a recurring problem. No clear cause has been found. In recent times the bearing seals on the alternators have begun to fail with the result that water leaks in to the alternator with resulting failure. However in general the performance of the wave activated generators has been satisfactory.

As the units are now more than ten years old they are being replaced with units designed and built in Northern Ireland. These operate on an aerofoil principle rather than the valve rectification, but are otherwise similar to the TG2 in concept.



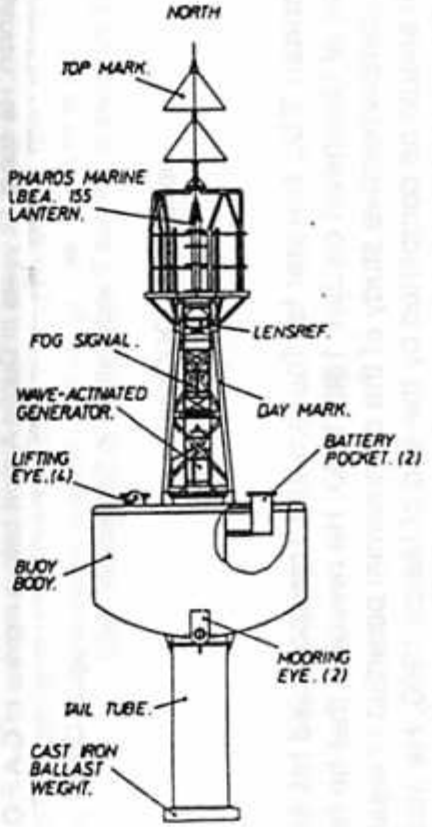


Fig. 11. General Arrangement of WAG Buoy

SERVICE NEWS

The end of the 80s has seen the departure of a number of stalwarts from the Meteorological Service - George Callaghan and Paddy Kelly in Sept. 1989, Paddy MacHugh and Bill Wann in Jan. 1990 and Tony O'Dwyer in Feb. 1990.
To all of them we extend our best wishes for a happy and fulfilling retirement.

Paddy MacHugh joined the Meteorological Service at 1949 after a short stint in the General Service. He was appointed Meteorologist in 1955, serving in Dublin Airport and the Central Analysis and Forecast Office (C.A.F.O.) . In 1983 he was appointed Senior Meteorologist and took on the heavy mantle of Officer-in-Charge of C.A.F.O., a position he held until his retirement on Jan. 5th.
He was one of the original T.V. weather forecasters back in the 60s and for 26 years his forecast after the 9 o'clock News was a 'must' for the many people whose lifestyles, occupations and activities were weather-dependent.

George Callaghan began training in Valentia Observatory in 1948. In the following years he served in Shannon and Dublin Airports before his transfer to the Forecast Office in Dublin. Like Paddy MacHugh, George was one of the original group of T.V. weather forecasters.
In 1973 he transferred to the newly formed Marine Unit which began supplying forecasts to the Oil-drilling platforms that began searching for oil and gas off the Irish coasts. George was promoted Senior Meteorologist in 1978 as Officer-in-charge of Applications Division and retired in September 1989.

W.H.(Bill) Wann had been in the Service since 1947, serving at various times in Dublin and Shannon Airports, Headquarters and C.A.F.O. as Meteorologist.
He was appointed Senior Meteorologist in 1975 and later that year transferred to Shannon Airport as Officer-in-Charge. The following year he was appointed Officer-in-Charge Computer Division. Bill became Assistant-Director in 1980 and has served as Ireland's representative on many International Organisations.

P.A.(Tony) O'Dwyer started in the Service in 1947 at Dublin Airport. Subsequently he served in Shannon Airport, Headquarters and Baldonnel (now Casement Aerodrome). After a short spell in the Forecast Office he transferred to Outstations Division in 1977. In 1979 he was promoted Senior Meteorological Officer and in the same year became Officer-in-Charge of Instruments Division with responsibility for the many and varied new technical additions to the Service.

P.V.(Paddy) Kelly was the longest-serving of the recent retirees, joining up in 1944. Over the next 6 years he served in Foynes (then an important sea-plane base), Shannon, Midleton and Ballygarvan. He spent 12 years in Dublin Airport before moving to C.A.F.O in 1962 and then to Agmet in 1968. Following promotion to Meteorological Systems Analyst he went to Computer Division in 1975 and was appointed Principal Meteorological Officer there in 1984. After almost 45 years of service Paddy retired in September 1989.

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Mr. Seamus Brennan T.D., Minister for Tourism and Transport paid his first official visit to the Service at Glasnevin on Jan. 18th 1990. He revealed that he has commissioned a comprehensive study of the commercial potential of weather forecasting which should be completed by the end of March 1990. He also revealed that a full-time commercial manager is being appointed to market the Service's products.

Forthcoming Events of Meteorological Interest:

CLIMATOLOGY IN IRELAND

ONE-DAY MEETING

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A one-day meeting on Climatology in Ireland will be held on **Monday April 9th** 1990 at EOLAS, Glasnevin, Dublin 9.

The meeting will review International climate programmes and current climate research in Ireland with a view to developing an Irish climate research programme.

It is being organised by the Climate Study Group of the National Committee for Geodesy and Geophysics and the convenor of the meeting is **Dr. John Tyrell**, Department of Geography, U.C.C., telephone 021-276871 ext. 2326, to whom all enquiries should be addressed.

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EARTHWATCH, the Irish Environmental Organisation, is co-ordinating a two-day conference on climate change to be held at the Riverside Centre, Dublin on **19-20 May** 1990.

Both days will feature a mix of papers, workshops and open forums; there will also be an exhibition on Global Warming with displays and information from interested groups and organisations.

Among the presenters of papers will be Prof. James Dooge of U.C.D., Prof. Gerry Wrixon of U.C.C., Dr. P.M. Kelly of University of East Anglia, Dr. G. Kats of the Rocky Mountain Institute, U.S.A and Dr. M. Jones of T.C.D.

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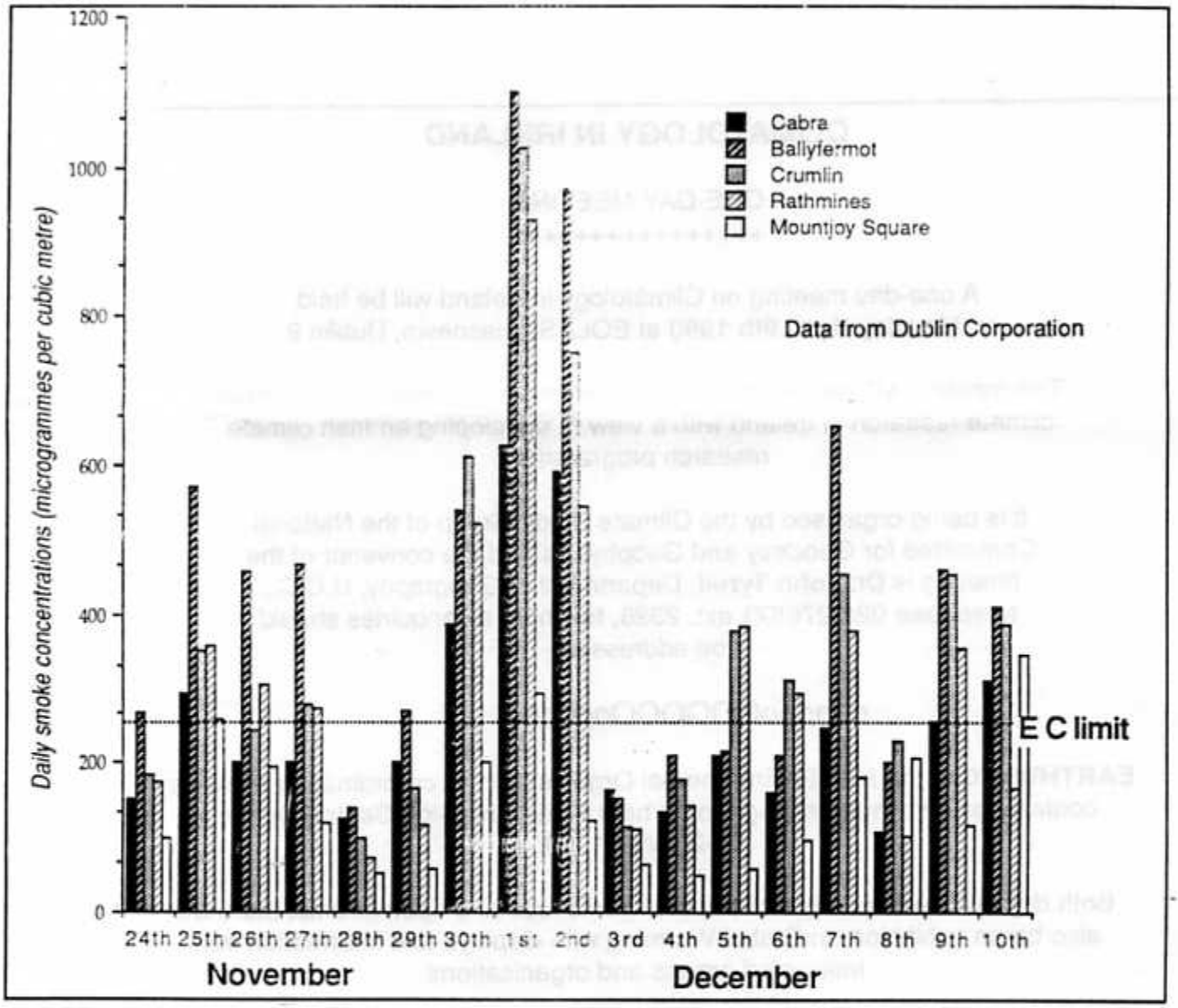
The Society's next lecture is being held jointly with the Royal Aeronautical Society on **Feb. 23rd** in the **Shell Theatre**, Dublin.

Arrangments for the Annual Outing to Mace Head Field Station are nearing completion.

.....**LATEST**:: To mark W.M.O. Day in March, a lecture has been arranged for the Carrolls Theatre, Dublin on **Thursday March 22nd.** The speaker will be Prof. E.J. Nash, who was awarded the 1989 International Hydrology Prize. The theme for W.M.O. Day this year is "Natural Disater Reduction-how can Meteorological and Hydrological Services help?"

Smog in Dublin



(Note:the value for Crumlin on the 27th is estimated)

How bad was it?

The graph presents a clear picture of the severity and duration of the latest smog episode to afflict Dublin. On 13 of the 17 days in the period from the 24th of November to the 10th of December, smoke concentrations in excess of the EC limit of 250 microgrammes per cubic metre were measured in the city. On 5 of these days, The amounts measured were more than twice that limit. while on Friday the 1st of December the monitoring stations at both Ballyfermot and Crumlin measured concentrations four times the European limit. Higher peak values were recorded during the smog of November last year, but that episode only lasted for four days.

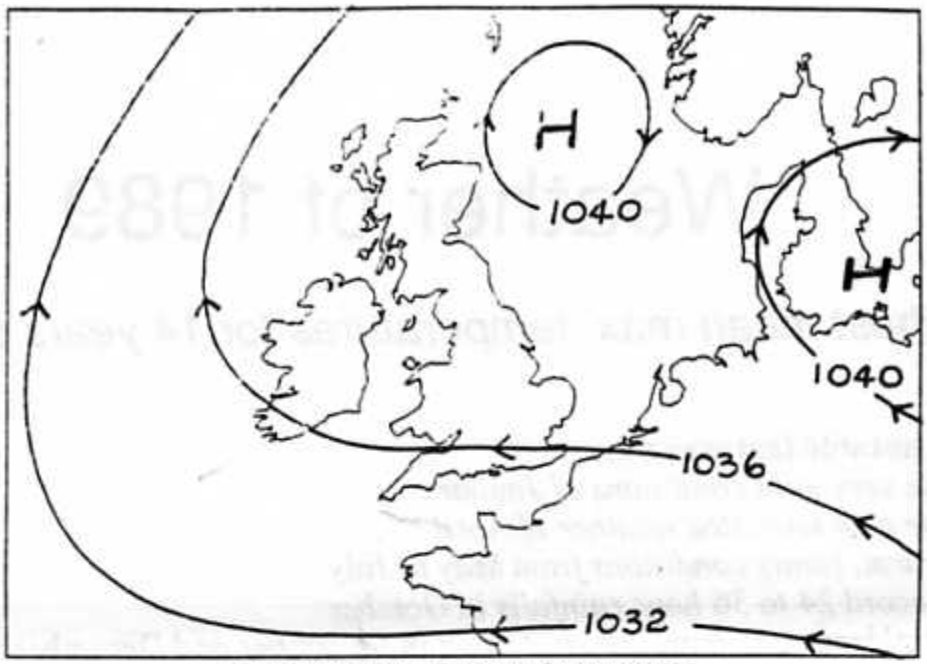
What causes smog?

Atmospheric pollution concentrations have risen significantly in the Dublin area since the late 1970s. The oil crises of the '70s led to a substantial increase in the use of coal for domestic heating, which is the main source of smoke in the city. Most of the time the atmosphere does a good job of getting rid of pollution, through dispersal by the wind, dilution by turbulence and cleansing by rain. In high pressure situations however, the atmosphere becomes stagnant: there is little or no wind or rain and turbulence is damped by a temperature inversion. In summer that means warm, sunny weather, but in winter it means a settled period of cold weather in which, naturally, people light fires

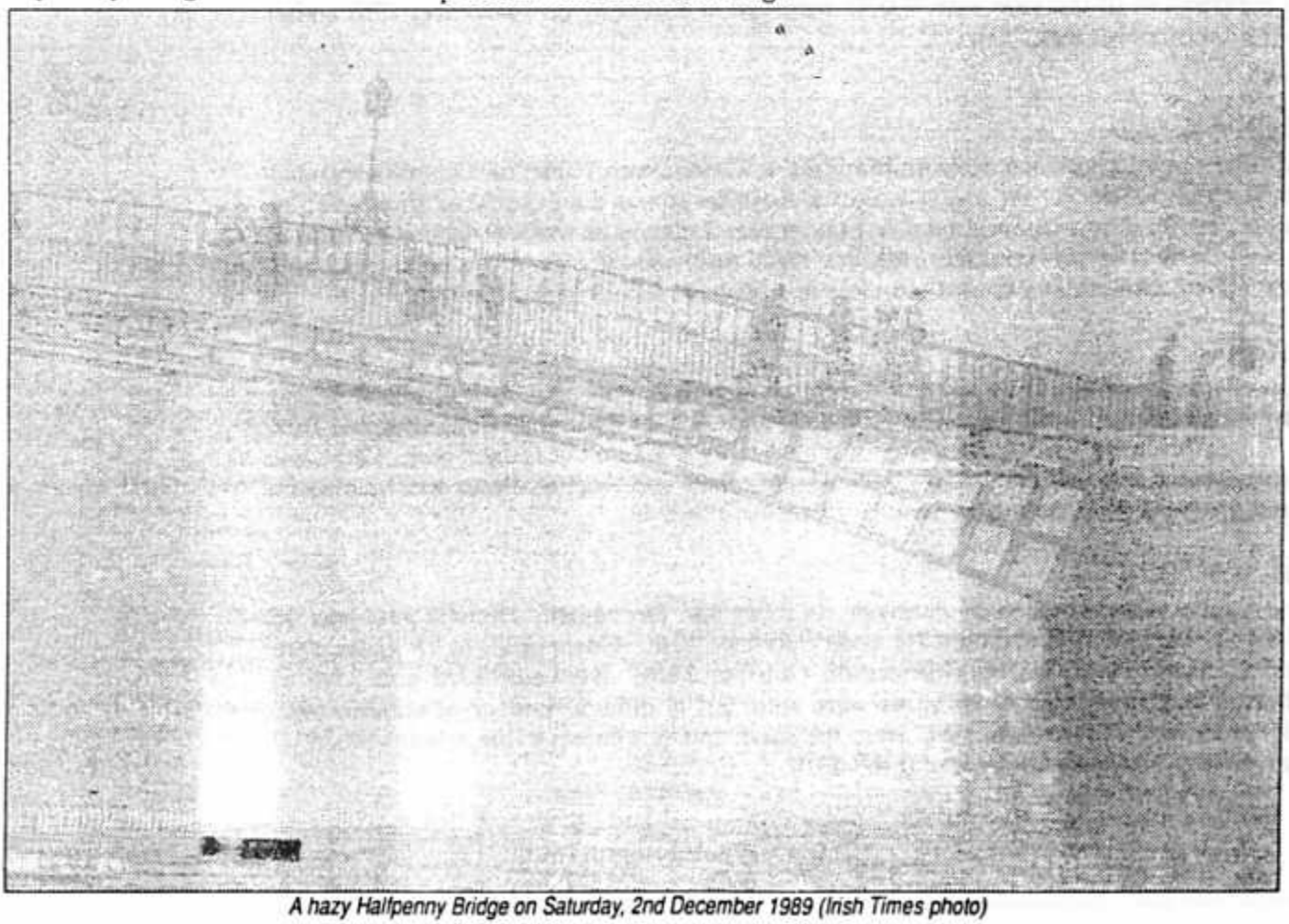
to keep warm. The problem is that the resulting smoke pollution has nowhere to go, and the longer the episode lasts, the more the smoke levels build up.

The meteorological situation

That is exactly what happened late last month, when a high pressure area centred near Iceland slipped southeastwards to cross Ireland on the 26th and 27th of November. By the end of the month the high was centred to the east, and the first two days of December saw the worst conditions of the period, with persistent fog and frost and very high smoke levels. The centre of the high shifted to the northwest during the next couple of days as pressure fell over Scandinavia. There was more cloud and temperatures were higher, especially at night. It remained hazy, but fog was not persistent, except on the 5th. However the meteorological situation remained anticyclonic with light winds and temperatures still a bit below normal. Smog remained a problem until the area of high pressure slipped back southeastwards during the 9th and 10th, after which we had much more unsettled and at times quite blustery conditions. A welcome change nonetheless!



The midday chart on Friday, 1st December 1989


A hazy Halfpenny Bridge on Saturday, 2nd December 1989 (Irish Times photo)

Weather of 1989

Highest mean max. temperatures for 14 years or more

Most notable features were :

(1) the very mild conditions of January
(2) the cold unsettled weather of April
(3) Warm, sunny conditions from May to July
(4) Record 24 to 36 hour rainfalls in October
(5) Problems with frost, fog and smog in November and December.

Except near coasts in the north and west mean annual temperatures were the highest since the mild 1983 or before; in Munster and east Leinster they were the highest for 30 years or more. At Dublin Airport (10.7°C), it was by 0.4°C the highest annual mean since recording commenced in 1942. Mean maximum temperatures were between 0.4°C and 1.4°C above normal while mean minima were mostly 0.5°C to 1.0°C above normal. Only Roche's Point and Galway had absolute maxima higher than those of 1983. Roche's Point had a maximum temperature on July 17th which was 1°C higher than the 26.5°C recorded in August 1976. Lowest temperature of the year was -7.0°C, recorded at Kilkenny on November 27th and at Birr on the 1st of December.

Rainfall

Rainfall totals varied between 1374 millimetres at Cahirciveen (Valentia Observatory) and 555 mm at Dublin Airport. At some stations in Leinster it was the driest year since 1975 or 1976 but at Dublin Airport it was the driest on record. Percentage totals ranged from 74% at Dublin Airport to 118% at Belmullet. Highest daily total was 68 mm, recorded at Belmullet on October 27th; more than 130 mm fell there in a 36-hour period over 27th-28th.

Sunshine

Sunshine duration ranged from 1656 hours at Rosslare to 1228 hours at Birr while percentage totals varied between 112% at Clones and 94% of normal at Belmullet and Birr. Even at Belmullet and Birr it was the sunniest year since 1982 and at Cahirciveen, Casement Aerodrome (Baldonnel), Clones, Cork Airport, Kilkenny and Roche's Point sunshine totals were the highest for 20 to 30 years.

Winds

Strongest winds were recorded in February, October and December. Highest gust was 86 knots (99 m.p.h.), recorded at Malin Head on February 13th. Gusts of 70 to 75 knots were recorded at coastal stations of Munster on October 28th. Between 23rd and 25th of December gusts in range 60 to 70 knots were recorded at quite a number of stations with Belmullet recording 78 knots on 24th. Near the south and east coasts damage was caused by high seas and high tides on December 16th - 17th.

Joint

Irish Meteorological Society

and

Royal Aeronautical Society

(Dublin Branch)

lecture on

The Wright Brothers

by

Captain Kilian Tormey

of

AerLingus

In 1903 the Wright Brothers made the first successful manned, heavier than air, powered flight and in doing so paved the way for aviation as we know it today.

Shell Theatre, Hatch Street, Dublin 2

FRIDAY 23rd February at 8PM

Open to the Public *Admission Free*