CHAPTER 17

The American Meteorological Society and the Development of Broadcast Meteorology

ROY LEEP

Introduction

Forty years of my professional career have been spent in weather casting. That in itself is not unique. However, 38 of these years hav been spent at the same television station, and that may be unique. had never been inside a television station prior to starting my curren job. (I give this brief history so that you can understand my perspectiv for the review that follows.) Although I have worked in only one are of the country, I have been closely involved with the AMS Seal o Approval program since its inception and with the broadcasting indus try since my entry into it. From my "stable" job position I have beer able to view the ever-changing emphasis and direction of two indus tries, broadcasting and meteorology. Thus despite the fact that my view may be rather myopic, I have attempted to gather and correlate in some meaningful manner, information on broadcast meteorology spanning 50 years of the 75-year history of the AMS—a specialty that I believe has been the greatest single influence on our Society and its public perception.

The professional weathercaster is often accused of being an over-paid, eccentric showperson, but the true professional can be a bridge by which our complex science can be reached and understood by the public. When I became fascinated with meteorology, there was no television, but today many fine students received their first taste of the science through the weathercast.

I was a product of the U.S. Weather Bureau, having interned there in the 1940s, but today there are many professionals who are shaped largely by television weathercasting. This is a lasting legacy that the professional weathercaster can point to with pride. The AMS has

played an important role in the development of this remarkable specialty. The standards of the Society have been accepted by and large by the broadcast industry and hold at bay the attempts of some to return to an unprofessional approach.

What the future will hold can be discussed at another time. Broadcast meteorologists today have an established, important role in radio and television newscasts. It is difficult to foresee a future in which they are absent.

The early years

Genesis

In the beginning there was radio, and no doubt some of the early ad-lib conversations in this new medium in the 1920s made reference to weather. Aside from unique governmental efforts on special frequencies, we may never know who first remarked about the weather over the air. However, we have some evidence suggesting who this person was and when and where forecasting was first put into a daily format. Many contemporary weathercasters owe their own interest in the profession to E. B. Rideout, who was weathercasting as early as 1923. Rideout, a former Weather Bureau forecaster, was hired full time by WEEI in Boston, in 1926. He remained on the air for some 40 years. Don Kent, later of WBZ, Boston fame, was enthralled at the age of five by Rideout's broadcasts as he listened on his crystal set in 1923 (D. Kent 1994, personal communication). Harry Volkman, another resident of Boston and later an AMS Sealholder in Chicago, visited Rideout in his office several times in the early 1940s. Volkman states that Rideout gathered information from the short-wave radio stations WEK, New York City, and WSY, New Orleans, which broadcast in Morse code (H. Volkman 1994, personal communication). Of course, both Kent and Volkman have had illustrious careers to which I will refer later. It seems fitting that Boston was the incubator for future weathercasters and that the seeds of this specialty were planted so near the birthplace of the AMS. There is no way to trace the genealogical tree that spread from these early radio broadcasts. Although it seems safe to say that Rideout was the father of weathercasting, Rideout's name is not found in the AMS membership files.

1930–1950 era

Despite the fact that Rideout was the pioneer of weathercasting, there were only a select few of his followers that matured into full-time weathercasters prior to 1950. This was partly due to the occurrence of World War II, when all weather broadcasts were restricted. I can point, however, to a handful of exceptions and the years of their weathercasting debuts:

- Jim Fidler, WLBC, Muncie, Indiana, radio 1934; Weather Bureau Dumont Network, TV 1947
- Don Kent, WBZ, Boston, radio 1935; WBZ, Boston, TV 1955
- Harold Taft, radio 1946; KXAS, Dallas, Texas, TV 1949
- Nash Roberts, WDSU, New Orleans, TV 1948
- Louis Allen, WNBW, Washington, D.C., TV 1948
- Francis Davis, WFIL, Philadelphia, TV 1948
- David Ludlum, Philadelphia, TV 1948
- Clint Youle, NBC, Chicago, TV 1949
- Wally Kinnan, WKY, Oklahoma City, Oklahoma, TV 1950

Undoubtedly, there were others, but the emphasis here is on AMS professional members who were full-time weathercasters in the private sector. This was the core group of meteorologists who would lay a foundation of standards for others to follow and exceed.

1950s growth

The explosive growth of television stations during the 1950s provided impetus for private sector meteorologists to multiply rapidly. World War II and the Korean War also provided training for a number of meteorologists in the 1950s. As the broadcast industry began to grapple with the issue of formatting of news, weather, and sports, weather proved to be most controversial. The controversy stemmed from well-meaning journalists or program directors who knew little about meteorology or its importance to the public. If a journalist had high standards, he quickly realized the importance of a qualified broadcast meteorologist but was usually unable to find one. Most program directors, on the other hand, knew they had a certain number of minutes to fill and concentrated on glitz and showbiz rather than con-

tent to hold the attention of the viewers. Some television stations took the view that any journalist could just read the weather. Others wanted to hype the presentation with attractive but uninformed and unqualified presenters. Still others wanted to treat the weather as either the "throw away line" for the news anchor ("It will be fair and warmer tomorrow—good night.") or present it as entertainment. It was the entertainment aspect that created great concern for early professional weathercasters. As stated earlier, only a few professionals had a toehold on the national scene.

There were a few television companies strongly committed to good journalism and armed with an Edward R. Murrow–type credibility that envisioned only a qualified meteorologist dispensing the weather report. These companies were certainly in the minority in the 1950s. Qualified weathercasters had to prove that they were the ones viewers trusted and watched. Time and time again in a variety of television markets, breakthroughs were made when severe weather became the main story. A credible, reliable report from a familiar face became the public's demand. From reporting on tornadoes in the Midwest, to hurricanes on the coast, to blizzards in the West, to nor'easters in the East, it was the professional who stood out. In every case, the public overwhelmingly demanded reliability, accuracy, and an articulate, educated communicator to provide information and assurance during an emergency. Radio came close to fulfilling this demand but was faceless. Thus only television could do it, and only the meteorologist was fit for the task of providing accurate, dependable, necessary information on a daily basis, thereby developing a rapport with viewers that inspired trust when severe weather threatened. It did not take long for news directors and station managers to grasp this fact. Wherever there was one meteorologist in a market, competing stations were soon looking for their own, and so the multiplication process began in both large and small markets. If one person did the job at night, why not have a second for the mornings and a third for weekends? Network affiliates seemed to have sufficient funds for this type of staffing, and thus by the 1960s, the demand could be as high as nine qualified weathercasters, in every market served by CBS, ABC, and NBC. The frenzy was on through the 1960s and 1970s.

What makes an outstanding weathercaster? Not necessarily a Ph.D. or a Masters degree, not necessarily a glib tongue or pleasing profile. All of these attributes help, but in the final analysis, the viewing audience and professional peers will decide what they prefer and why. I think to begin with, there must be a love of the subject and the method of communication—that indefinable mystic charisma that embodies certain qualities that are natural and cannot be learned: intensity, professionalism, friendliness, and sensitivity. Precision yes, but human vulnerability and genuine sincerity are traits that viewers inherently trust. Perhaps the qualities of a successful salesperson combined with those of a wise scientist could go a long way in defining what makes weathercasters outstanding. If we rush to rank individuals by market, city size, or years or experience, we may very well miss the mark, since I believe outstanding weathercasters can be found in both large and small markets and with 5 or 40 years of experience. There are many who are good, but only a few are outstanding. Do they command above-average salaries? They should and usually do.

Weathercaster versus government

Policy evolution

Jim Fidler (1948) and Francis Davis (1976), among others, have alluded to an adversarial relationship between federal agencies and private sector broadcast meteorologist. I, too, have experienced this at several levels over my years in the profession. The problem is that big government begets bigger government, and the private sector usually suffers as a result. Throughout the tenures of different chiefs of the Weather Bureau or National Weather Service (NWS), there have been various policies regarding relationship of the government to the private broadcaster. The NWS, of course, has a Congressional mandate to serve the public, especially in regard to life-threatening weather. The NWS generates data, archives it, and is the sole source of most basic observations and refined computer forecasts globally. Obviously, the broadcast meteorologist or private sector consultant must rely and build upon many of these data for their work. Jealousies have arisen in the past over crediting the source of forecast information, accuracy claims, equipment capabilities, suspected errors in basic data, and, above all, the overshadowing public attention given to weathercasters. Policy has enlarged, ebbed, and flowed over the last 60 years as the interpretation of the Congressional mandate for service and technologies in the marketplace change. The Freedom of Information Act solved some long-time points of contention involving availability of

data in a timely fashion. Initially, broadcast policies were nonexistent, and the old Weather Bureau freely supplied data to meteorologists for television and radio on commercial stations. Policies prohibiting this are now in place. However, the shadows of old policy are still in the background and may arise again in new areas, such as the new National Oceanic and Atmospheric Administration (NOAA) Weather Radio transmission and even "broadcasting" on the Internet. The government sector will probably never be completely pleased by the broadcast community's role in this relationship because of several factors. For example, I believe there is an inherent, and understandable, envy on the part of some government meteorologists toward the highly paid and visible private sector. Nonetheless, this problem seems to have lessened since the 1970s, and the most recent policy (1991) formulated under Director Elbert "Joe" Friday has gone a long way toward revitalizing a spirit of cooperation and understanding between the two sectors. With all of the past difficulties and problems between them, the total system successfully works like no other in the world. No other nation has such a large, diverse, and efficient network of radio and television stations staffed by qualified broadcast meteorologists who are able to interpret and relay life-saving weather information supplied by the government service. This appears to be the bottom line for continuing a fruitful cooperation.

Private sector concerns

Francis Davis (1990) and Don Kent (1994, personal communication) have alluded to battles fought with the old Weather Bureau over allowing private meteorologists access to teletype circuits in the 1940s and 1950s. The AMS played a role in settling this dispute, which cracked the door for today's flood of data and services. The freedom of information that we enjoy today was not always in vogue, and there are still pressures from foreign governments to restrict certain data and/or computer outputs. Many foreign governments severely restrict the operation of private meteorologists for fear of direct competition. Broadcast meteorologists rely upon increasing amounts of global data, as models produce more accurate forecasts.

Most weathercasters on television ad-lib their discussions because of the very timely nature of the data. In weather emergency situations, this can be a formidable task and, during the undertaking, may strain

or even break the strict policy of the NWS. There is an increasing belief that the NWS severe weather bulletin, whether right or wrong, must be aired in total. Could it be wrong? Yes. With real-time radar and satellite pictures displayed in front of the public, written warnings may be out of date. There have been several instances of outside tower cameras observing tornadoes and waterspouts for which no official warning has been issued. Surely the professional weathercaster has that duty and must exercise it responsibly. Another area of concern relates to the unique relationship between the NWS and private universities. Training aids provided at a low cost to universities are provided at a much higher cost to private broadcasters. Although the present-day spirit of cooperation between private broadcasters and the NWS is good, there will always be problem areas ranging from the local forecast office to the regional office to headquarters because decisions made at any of these three levels can adversely affect the private broadcaster. Better communications seem to be ameliorating these difficulties.

Encroachments

Anywhere the NWS is broadcasting is an encroachment on the private sector. In the late 1960s when the NOAA Weather Radio (NWR) was established, I was opposed to it as I am today, on the single principle that it was and is clearly outside of the NWS's realm of responsibility. While the NWR has had mixed reviews from its audience over the years and its equipment has become antiquated, I am certain that it has been a source of pride and promotion for the NWS. One can make all kinds of arguments for its continuation. My problem arises from the trend toward the NWS getting out of surface observations and into broadcasting. If subcontracted work is an option, then broadcasting should have been contracted to professional broadcasters using state-of-the-art equipment. Many private broadcast meteorologists could have obtained a job, and overburdening NWS employees (who are not broadcasters) could have been avoided.

The AMS commitment

Beginnings

As mentioned previously, one of the earliest concerns of the few pioneering professional broadcasters was the deplorable spread of

"weather shows" that ranged from light comic entertainment to weathercasts performed by announcers passing themselves off as meteorologists. Members of the AMS wanted to have the science portrayed in the proper light and started procedures toward attaining that goal. Early chronology of the AMS providing concern and support for the weathercasting industry is described in its own documents and by two of the original committee members, Francis Davis (1976) and Kenneth Jehn (1956).

Organized committees

In January 1954, the council voted to establish an ad hoc Committee on Radio and Television. Francis Davis was the chairperson, and Howard Taft, Jim Fidler, Eugene Bollay, Louis Allen, Clint Youle, and Richard Reed were members. At the AMS meeting in Washington, D.C., in May 1955, the Council accepted the ad hoc committee report consisting of nine points and voted to establish a permanent Committee on Radio and Television to adopt a Seal of Approval to be given to individual weathercasters meeting minimum requirements (AMS 1955a). In September 1955, the Society put out a request for names of all members interested in radio and television (AMS 1955b).

In his address before the national meeting in September 1956, President Fletcher said, "The best opportunity in our history is now available through the medium of television" (Fletcher 1956). The ad hoc committee was dissolved, and in its place the same members were appointed to a committee that made final recommendations to the Council in April 1957 on establishing the Seal of Approval program. Shortly thereafter, the Board on Radio and Television Weathercasting was established and was composed of Kenneth Jehn (chairman), Davis, Fidler, Wally Kinnan, and Lawrence Mahar. This board continues to operate with regular changes in membership.

Organized conferences

In October 1955 at the national meeting, Jehn presented a paper envisioning a Society program that would encourage and promote the professionalism of weathercasters (AMS 1955b). In March 1956, the first *National Conference and Workshop on Radio and Television Presentation of Weather* was held in Hartford, Connecticut, cosponsored by

the AMS and the NWS (AMS 1956). This first meeting evolved into an annual conference. However, the idea of a regularly scheduled national broadcaster's meeting was overlooked until 1967. I was privileged to serve as Chairman of the Board on Radio and Television Weathercasting that year and, with Executive Director Ken Spengler's help, convinced the Council that this growing specialty needed its own regular meeting. Subsequently, the first solely AMS-sponsored regularly scheduled meetings began in Tampa, Florida, on 8 December 1967 (AMS 1967). The most recent was the *24th Conference on Broadcast Meteorology* held at Dallas with the diamond anniversary observance. Only radar meteorology has had more conferences.

Seal of Approval

Aside from Honorary Seals that were issued in 1959 to the original Board members, the first AMS Seals of Approval were issued at the national meeting in January 1960. Qualifications for membership in the AMS have changed since the inception of the seal program. For the most part, these changes have been to require higher levels of formal training (AMS 1994a). The seal program in earlier years allowed periods of "grandfathering" members to enter the program providing other criteria were met, such as a written examination in some cases. Today, the seal applicant must be a full member of the Society. The seal requirements today are as they were in 1960, which is much to the credit of the original committee. The Board on Radio and Television reviews applicant's tapes on the basis of four criteria: technical competence, information value, explanatory value, and communication skills. The Board and the AMS reserve the right to suspend or revoke the seal, so that a continuing standard is expected of those who receive and display it (AMS 1994b).

Probably the most gratifying example of AMS membership recognition and support of weathercasting was when Robert Ryan, weathercaster at WRC-TV, Washington, D.C., was elected president of the AMS in 1994—the first weathercaster to hold that position.

Professional growth

The growth era

I have previously alluded to the growth era of the 1960s, 1970s, and 1980s. Throughout these decades, over 700 seals were distributed from

coast to coast. The rapid increase in the number of of weathercasters continued at break neck speed. In some regions, the number grew faster than in others. For example, the eastern states had more weathercasters than the West. However, Florida, New England, Texas, and Oklahoma seemed to have the greatest number of active sealholders.

In Florida, the Tampa Eay area exemplified the nation's rapid growth. Professional weathercasting started there in 1955, and the number of weathercasters continued to grow. As of today, there are 13 active sealholders on television in Tampa Bay, including five apiece for two television stations. Generally speaking I think of sealholders at three categories of stations:

1) *basic*, where one meteorologist works with a minimum of value-added data;
2) *weather service*, where two or more meteorologists work with value-added data and additional station-owned equipment; and
3) *departmental*, where three or more meteorologists work in their own department separate from the news department and report directly to the general manager.

The departmental service would be expected to have a wide range of equipment, an operating budget, capital expense budget, and perhaps a consulting service. There are few such departmental stations. WTVT in Tampa became such a station in 1962, and two of its trained meteorologists have established similar departments in New Orleans (Bob Breck) and San Francisco (Pete Giddings). The WTVT department today has a staff of nine.

Growing pains

In the 1970s, cable television grew tremendously, and by 1980 CNN began with a limited amount of weather information. Valerie Voss who started in 1979 and was one of the first female professional weathercasters, now heads up the CNN weather staff. Cable finally generated a dedicated weather channel. It was the brain child of John Coleman, who took his idea to Landmark Communications. The Weather Channel was launched in May 1982. In 1983, Coleman was awarded the AMS Award for Outstanding Service by a Broadcast Meteorologist, due in large part to his development of The Weather Channel. But sadly, later that year, Coleman and Landmark parted ways because of the initial lack of profit, and he never was part of the huge success of the venture he founded. The Weather Channel has had no more of a detrimental effect on local weathercasters than CNN has had on newscasters. In fact, both have probably stimulated viewing for each other during severe weather. It is disappointing, however, that although some of The Weather Channel staff have been awarded the AMS Seal of Approval, it is never displayed on this nationally seen broadcast.

Directions and goals

The major networks, ABC, CBS, and NBC, have only dabbled with using meteorologists, and none have ever consistently done so in their evening newscasts since Clint Youle was featured in the 1949–1959 era. I think it is disappointing that the networks run hot and cold on the importance of weathercasting in their morning programming and are currently using weather reporters instead of meteorologists. Joe Witte has been the most successful sealholder, appearing on the early *NBC News at Sunrise* program since 1983. It appears to me that what the local station affiliates learned well is still unknown at the network level. The fact that all networks have used professional meteorologists during periods of severe weather, such as hurricanes, illustrates the esteem in which they are held by their respective news organizations. Yet often the morning network programs are not under the total jurisdiction of the news department. Furthermore, weather personalities are used for commercials and other duties that are not allowed for the pure news anchor. This turbulent area is still ripe for qualified on-air meteorologists and should be a goal for the near future.

Cable continues to fill an insatiable appetite for weathercasting. Many local stations are supplementing their broadcast agendas with some type of continuing weathercast. This relatively new area will supply new job opportunities and new formats to explore. As more sophistication arrives with greater technology, one can see that some type of interactive weather information will be available by cable. Whether this will be graphics on demand or actual one-on-one briefings will be determined by the marketplace and available technology. But it is certain that during the next 10–20 years these will be the new areas in which broadcast meteorologists can become involved.

Concerns

While the AMS seal program today is largely recognized throughout the broadcast industry, having the seal is no guarantee of employment. On the other hand, not having it could deter employment. Since its inception, the different memberships of various boards have wrestled with a multitude of fears and problems. The seal program itself seems to be alive and well, but the concerns of its membership range from a perceived lack of AMS support, to the ever-present threat from nonprofessional or unqualified broadcasters, to increasing pressure from television management to be less scientific or to "dumb down" presentations, eliminating educational value. All of these problems are real, and the younger, less established sealholder may be tempted to compromise instead of defending the science. As a result, the AMS needs to continue its strong endorsement of the Board on Broadcast Meteorology in its pursuit of educational content and scientific excellence in weathercasts.

Three problems in weathercasting that are surfacing more these days are as follows.

NATIONAL WEATHER SERVICE. When there is one exclusive national source for global weather information, then it is obvious that such a source could coerce private broadcasters into policies that may not be in their best interest. I have touched on and explained some of the problem areas earlier. While the trend seems to be toward improvement, there continues, on behalf of many broadcasters, to be an incomplete trust of current NWS policy.

NEWS DIRECTORS. Some, but not all, news directors treat their weather staff as second-class citizens. This can be reflected in budgets and on-air time. This is an internal industry-wide problem.

CONSULTANTS. Related to the two problems above is the fact that television stations hire consultants to assist them in programming. Among their many tasks is that of viewing weather program content and making recommendations for change to the news director. Almost invariably, the consultants advise shorter and simpler weathercasts. According to them, maps should not have isobars or perhaps even fronts. There are constant disagreements at many stations between the consultant–news director team and the meteorologist. Since the 1970s, the use of consultants has increased, and many weather programs have been forced to dumb down their presentations.

In his presidential address before the AMS, Fletcher related a story about a forecaster who was forced to state his forecast in one word before the city paper would print it. Fletcher stated, "The imposition of such short-sighted limitation on the forecaster certainly no longer exists—at least for the TV weathercaster" (Fletcher 1956). Consultants today are recommending one word or no words for each day of the five-day forecast!

Concerns and danger signs for the 1990s have been raised by Paul Joseph, a venerable broadcast meteorologist, of WTMJ, Milwaukee, Wisconsin. He cites what he calls the "Willard Scott syndrome," where the weathercaster's primary function is promotion and he or she ends up with little time for the weather program. The second danger sign Joseph mentions is the "*USA Today* approach," in which beautiful graphics are illustrated with little meteorological discussion. The final signs as seen by Joseph are "super-duper advanced graphic systems," which require an inordinate amount of time for preparation, although the images are only on the air for seconds. Joseph's concerns are ones that most broadcast meteorologists grapple with almost daily.

The digital revolution and presentation

Broadcast industry

Perhaps there has been no industry that has evolved in the public's living room as much television has. The evolution has progressed from the days in the 1940s and 1950s when a 4-in. screen produced a fuzzy black and white picture, provided the antenna was pointed properly, to today when a 100-channel cable-ready 5-ft screen provides brilliant color, resolution, and stereo sound. With such remarkable advances in electronics, the weathercaster has seen preparations become more time consuming and complex.

Presentation development

The early presentations by Fidler, Davis, Kent, and others employed blackboard and chalk, poster paint and plastic maps, or grease pencils and paper. Fred Ostby, the current director of the National Severe Storms Forecast Center, started in television with the Travelers Weather Service in Hartford, Connecticut, in 1957. He stated, "Our gimmick at the time was to present the forecast in the making. We sat

on a stool at the drawing board and would draw some features (with squeaky marking pens) on the map . . ." (F. Ostby 1994, personal communication).

Maps and forecast presentation made up one aspect, but another that was to prove equally important was the presentation of instrumentation and data. In the early 1950s, Bendix–Friez was one of the companies that produced a complement of dials for use in bank lobbies and other public places. With minor adaptation, these could be used directly on television. The wind dials were the only ones that showed much movement. Many stations had a set of mock dials that were preset prior to the program. In fact, Bendix even manufactured such a set. These were the earliest display devices.

All meteorologists realized the value of the relatively new tool, "radar." Since it generated an image on a screen, it was a natural for television. However, there just were not any radars being produced at an affordable price for television. Who was the first to use radar on a weathercast? Nash Roberts claims that he included radar for the New Orleans area in 1954, and Fidler had it for the Cincinnati area in 1955. Most of these early sets were converted shipboard navigational 3-cm radars with a range of about 25–30 miles. By the late 1950s, however, both Bendix and Collins were making 5-cm weather radars for aircraft with modification for ground use. Range was on the order of 150–200 miles, and most used about a 2–3-ft dish. Another technique of the time was to send the Weather Bureau radar picture to the television studio via microwave transmission.

Weather dials have not changed much over the years, but radar presentations have. By 1970, a few commercial vendors were making radar sets for television. WTVT in Tampa installed one of the new, solid-state radars including a Video Integrator Processor (VIP) encoder. The VIP installation was a copy of the NWS device but preceded their field installations. By the early 1970s, remote dialing into distant NWS radars was a reality, and by 1976, colorization of the radar VIP rainfall intensity levels was available. In 1981, a full Doppler radar was installed at KWTV in Oklahoma City, the first such on-air device. By 1984, pseudo-Doppler or wind shear radars were being produced, and KSTP in Minneapolis claimed to have the first. A customized full Doppler radar with a 200-ft support tower and a 20-ft antenna was built at WTVT in Tampa in 1988. Called SkyTower, it produces 12.5 gigawatts of effective radiated power and has a 450-mile reflectivity range. In addition to local installations, value-added companies have been producing composite radar maps and digital images providing single-site WSR 88D radar pictures that have joined the mix of available radar presentations in the 1990s.

Computerization

The 1980s brought the most tremendous changes to television weathercasting: Computers had arrived. WTVT in Tampa followed intently the development of the Man–computer Interactive Direct Access System (McIDAS) at the University of Wisconsin in 1977. In 1978, they purchased a McIDAS system, including a mainframe computer, communication ports, and Geostationary Operational Environmental Satellite interface. Special software was developed so that all weather circuits could be archived and data recalled. The McIDAS system was customized for direct television output. In 1977, the first partial broadcasts were made, and by 1978 the entire broadcast was digital. WTVT is now using their third-generation McIDAS, which archives and generates all the data locally without value-added assistance. Terry Kelly, a Madison, Wisconsin, weathercaster had also followed McIDAS's development. He and Richard Daley of the University of Wisconsin spun off the first weather commercial graphics system for television, called ColorGraphics. This system was the forerunner of more complex computer devices with increasingly greater adaptability and power. The on-air paper map was replaced forever, and presentations would never be the same. By the mid-1980s, most television stations had converted to some weather computer display device. At the same time, the entire broadcast industry was joining the computer revolution. The competitive drive of television stations led to a fast changeover to new technologies—a drive that continues in many areas of the industry.

Nowcasting

With the advent and use of radar in the mid-1950s, the first nowcasts were presented to the public. Since those early days, the whole purpose of the forecasting profession has been to gather, display, and quickly disseminate highly accurate short-range forecasts. Since radio and television allow immediate access to users, much of this responsibility lies with the weathercaster. Radar has been the steadfast tool

for 40 years, accomplishing much of the desired goal. With faster computers analyzing more data in near real time, the radar picture is being supplemented and merged with other pertinent pictorial representations. Satellite pictures, composite radar, graphical analysis and lightning data—all of this and more are available, with a few computer key strokes, to present an accurate and immediate visualization of any weather situation. Much of this type of operational development can be credited to the weathercasting community. Even before the Automation of Field Observations and Service (AFOS) and the Automated Weather Information Processing System (AWIPS), broadcasters had, through either their own development or a value-added company, most of the currently available nowcasting capability plus a built-in communication channel.

The spin-offs

Value-added industries

GROWTH

One company, Alden Electronics, has had a long track record with meteorologists. There are probably few forecasters who have not worked with a map or product produced by their famous 19-in. facsimile machine. Most television weather offices in the 1950s, 1960s, and 1970s had at least one and perhaps two of these recorders. With the launch of the Automatic Picture Taking (APT) TIROS and Nimbus satellites in the 1960s, it was again Alden that offered a complete earth station. As software replaced hardware and more value-added companies arrived on the scene in the 1980s, Alden made the shift to personal computer (PC) display devices. Lawrence Farrington, former Alden president, stated, "The 1960s and 1970s saw a coalescing of three forces—technology, products, and markets. Technology advances made possible new products, there was an industry ready to manufacture those products, and there was a ready made market for the new products—TV weathercasters" (L. Farrington 1994, personal communication).

Since the 1970s, three companies have remained progressive and competitive enough to share the Alden market: Accu-Weather, Kavouras, and WSI. Each of these companies supply value-added graphics and data to the majority of television stations. While each started and grew in different ways, all benefitted from the coalescing of technology, products, and markets.

MARKETS

All of the companies that serve the broadcast industry serve other related markets as well. Some have contracts with NOAA, NWS, FAA, or other government agencies, colleges, and universities. Although sophisticated and expensive terminals are required for broadcast quality, these companies are now offering PC versions to aviation or other weather-sensitive clients. However, these companies are a direct result of the broadcast industry. Most were formed by broadcasters and are run, to a degree, by broadcasters. When walking through the AMS Annual Meeting exhibit display, one is struck by the large percentage of hardware and software on display of which an earlier version was first seen on television weathercasts. It appears that the high quality standards originally established by weathercasts are now reflected in many video applications.

Education

The broadcast meteorologist has always occupied a position of teacher–instructor. Most of the time, forecasts are sugarcoated for the average viewer. However, just watching a professional weathercaster on a routine basis is educational. There have also been special educational projects that have been carried out over the years. One of the earliest projects using television was described by Ira Geer (1975). Sealholders have been providing types of direct education in on-air specials or as guests in schools or science museums for many years. In 1967, there was a Tampa station that provided a weekly 15-minute program called *Behind the Weather* (WTVT Weather Service 1991).

LOCAL AMATEUR NETWORKS

Perhaps the most novel and widely used tools for science education in broadcasting are the amateur volunteer networks that many broadcast meteorologists use to some degree. Whether formal or informal, these networks offer a source of weather data at a county or city scale

and stimulate the interests of both adults and students to learn more about weather while providing information. Long before SkyWarn, televisions stations were establishing amateur viewer networks. One of the earliest and best organized is the West Central Florida Severe Weather Network (Leep 1969). Organized in 1959, it still operates today with 200 observers. Participants receive educational materials and a monthly newsletter. Severe storm reports are instantly relayed from the network to the local NWS office.

Viewer–observer networks are in operation around the nation, offering practical education while performing a public service. Many young people have an opportunity to participate in the weathercast by learning to report accurate and timely weather information.

K–12 SCHOOL STIMULUS

During the days of teletype reports and paper maps, students would stand in line to receive what the weathercaster would eventually throw out. Having perceived this need for materials, weathercasters started to save what once filled the wastebaskets. This would be sent to or handed out at schools. Today with PC displays, there are not as many materials to answer this need. Television meteorologists, however, are still in great demand in the classroom, and they take whatever materials they can, or they host field trips to their stations for a firsthand look at the weather operations. In most areas, this could be a full-time occupation.

UNIVERSITY PROGRAMS

An increasing number of television stations are making internships available in their weather departments. Programs exist in which college credit is given for a term of interning with a qualified meteorologist. Many meteorology majors already have some on-the-job training obtained at a local television weather service. Some of these students are employed by TV Weathercasting after graduation.

In 1955, the AMS ad hoc Committee on Radio and Television recommended and the Council approved the following resolution: "Voted that the Society call to the attention of the professional schools of meteorology the desirability of their offering instruction in the presentation of weather information to the public via radio and television" (AMS 1955a). Colleges and universities were slow to respond to this

appeal, probably because of the economics of the situation. After all, most of the jobs were elsewhere. There were some exceptions, however. For example, The Pennsylvania State University began to give meteorology students the opportunity to work before the camera. Charles Hosler (sealholder 1960) and John Cahir (1969), both professors there, were largely responsible. Some universities looked down at such a "showbiz" occupation as demeaning to the science. Today, this attitude is changing, and many schools have combined studies with on-campus radio and television broadcasting to allow promising students an opportunity to test their capabilities. As in my case, most early weathercasters had no such advantage. I auditioned cold on camera, before videotape was invented, at the first television station I was ever in and the only one in which I have worked. Those days are gone forever. Now, when I look for an entry-level on-air meteorologist, the one who has had formal training and has videotapes is the one who usually has the advantage.

Epilogue: Personal observations

This historical review is not nearly complete due to the lack of space and information. Most papers presented by weathercasters at conferences are never published, and because of the nature of their demanding operational schedules, few have an opportunity to write articles for the Society's publication. Consequently, I have listed in the appendix conferences and their *Bulletin* references for further reading. I conclude with a series of historical photographs.

Broadcast meteorologists are often the recognized local representative of the AMS, and, for that reason, I dedicate this brief historical review to their professionalism and hope that it will provide current generations with a look at our specialty from the inside out. AMS Headquarters, especially Dr. Kenneth Spengler, has always been a strong supporter and ally of the weathercaster. Certainly it has helped provide the proper political atmosphere for the survival and growth or what more than a few think is a maverick specialty. The Conferences on Broadcast Meteorologist and the Seal of Approval program are alive and well. At the 1985 Conference on Broadcast Meteorology, the silver anniversary of the AMS Seal of Approval Program, 11 practicing broadcast meteorologists were recognized for their long continuous service. The following are some of the pioneers:

Bob Copeland—Boston
Francis Davis—Philadelphia
Al Duckworth—New Orleans
Jim Fidler—Cincinnati
Don Kent—Boston
Roy Leep—Tampa
Jim Smith—Cleveland
Milton Strauss—Madison
Harry Volkman—Chicago
Bob Weltie—Salt Lake City
George Winterling—Jacksonville.

In 1996, there are three remaining that have been continuously active: Leep, Volkman, and Winterling. Kent continues to broadcast part-time from his home office in New Hampshire.

Acknowledgments. My thanks to the many weathercasters, service companies, and headquarters staff who contributed to this history. My assistant, Anne-Marie Fagler, has tirelessly researched, typed, and edited. For an excellent reference, I recommend Robert Henson's *Television Weathercasting: A History* (McFarland & Co., 1990).

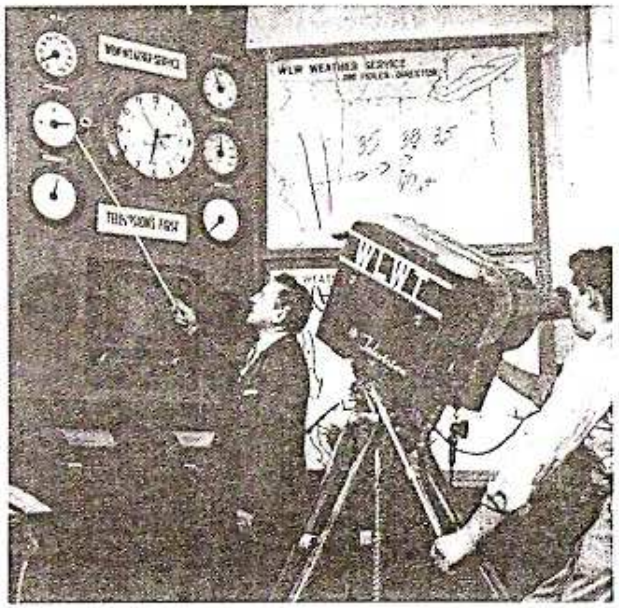

FIG. 17-1. Jim Fidler while broadcasting at WLWT in Cincinnati in 1954. Note the analog dials and hand-drawn maps. The concept of bringing the camera into the weather office can be as fresh and exciting today as it was in 1954.

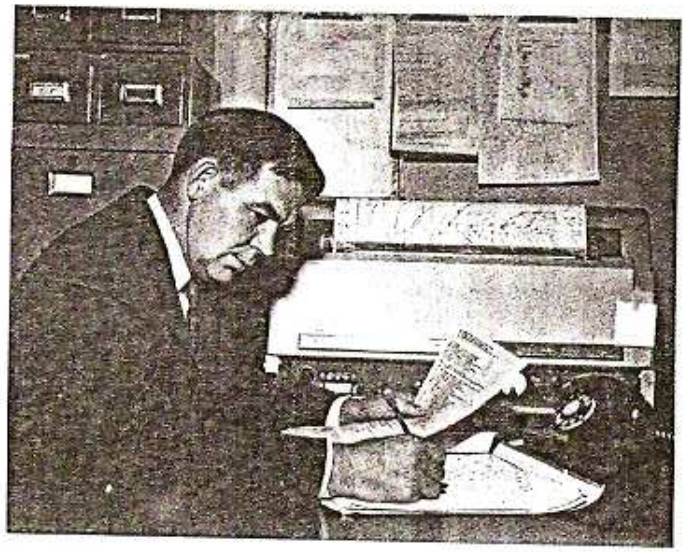

FIG. 17-2. Don Kent, in his Boston office in 1956, claimed the first teletype license in the late 1940s and the second fax license in the early 1950s. Kent continues to broadcast part-time from his home office in New Hampshire.

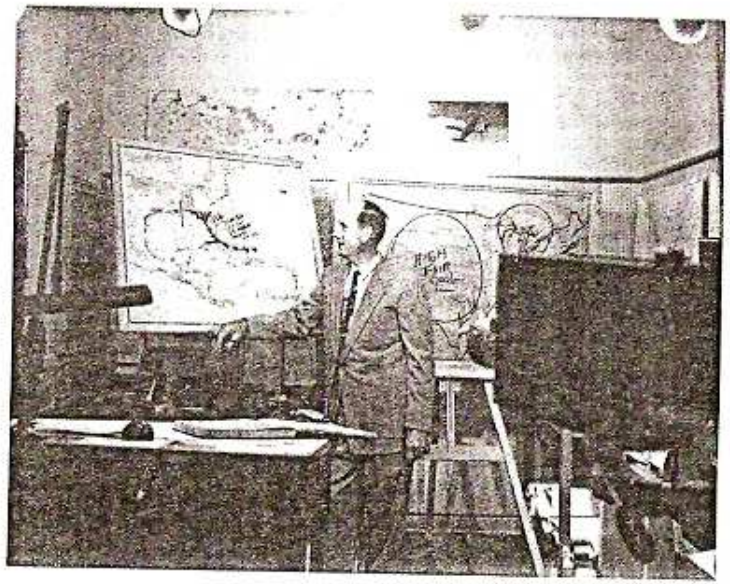

FIG. 17-3. Nash Roberts of New Orleans in his studio office in the 1950s. Roberts, like Fidler, used his office as the weather set, and while cluttered, it brought the viewer into where the action was.

FIG. 17-4. Francis Davis on camera at WFIL-TV in Philadelphia around 1950. This was one of the early studio sets. Note the commercial logo on the map. Today's purist would have trouble with that, but in the 1950s, meteorologists were glad to be sponsored!

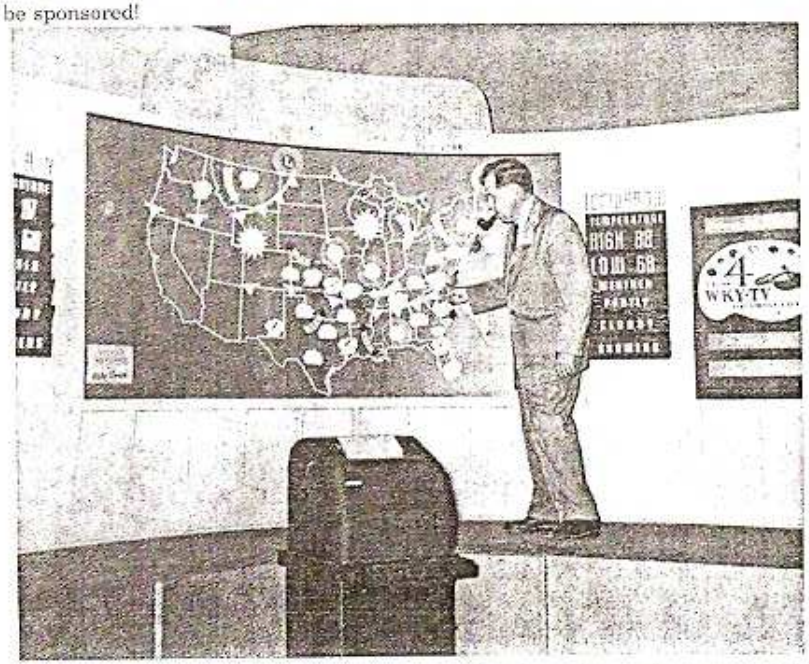

FIG. 17-5. Wally Kinnan presents one of the first color weathercasts in the nation at WKY-TV in Oklahoma City in 1955. WKY-TV's color cameras were the first employed by a local affiliate. Note the old 60-wpm teletype machine on which many early meteorologists cut their teeth.

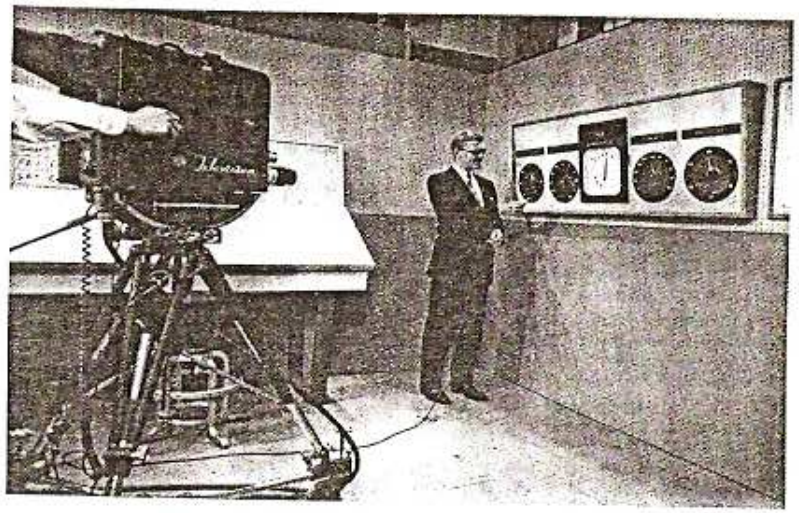

FIG. 17-6. Fred Ostby, current director of NSSFC, at the WTIC-TV Travelers Weather Center in Hartford in the 1950s. There were many notable meteorologists with Travelers. There is even an old kinescope recording of Dick Hallgren, current AMS executive director, making the rounds.

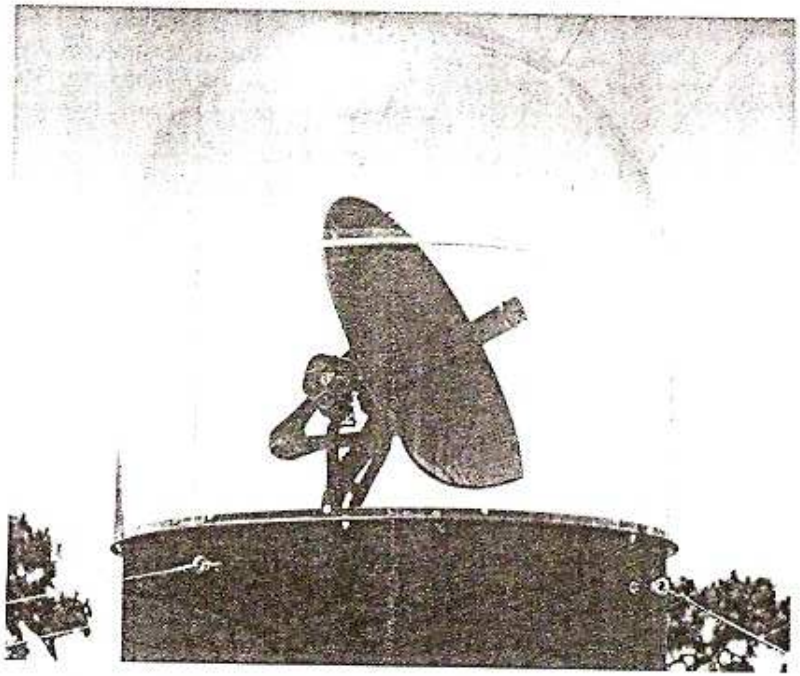

FIG. 17-7. The 2-ft antenna for the WP101 Collins weather radar used in 1959 at WTVT in Tampa. Its range was 150 miles. These small dishes, originally intended to go in the nose of an aircraft, were modified for 360° rotation.

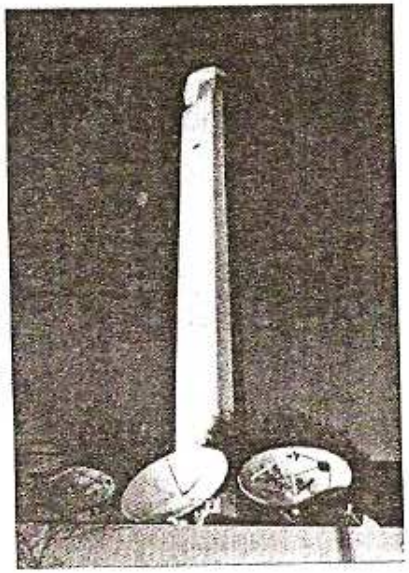

FIG. 17-8. The 200-ft concrete tower that supports the 20-ft antenna for the Doppler radar in use at WTVT in Tampa since 1989. Its reflectivity range is 450 miles. A two-man elevator can lift technicians to the air-conditioned receiver–transmitter room under the radar dome.

FIG. 17-9. An Alden exhibit booth at an AMS meeting in the 1970s, displaying two facsimile machines used in that era. During the 1950s and 1960s, Alden was often the only exhibitor at AMS meetings. Their fax machine usually drew a crowd of out of town meteorologists checking the weather back home.

FIG. 17-10. In this 1970-era picture of the WTVT Weather Center, Tampa, there are four Alden systems being used, including two 18 in. machines for NAFAC, DIFAX, and radio fax; an APT system for TIROS and Nimbus satellites; and a dial-up remote radar recorder to receive NWS radar pictures.

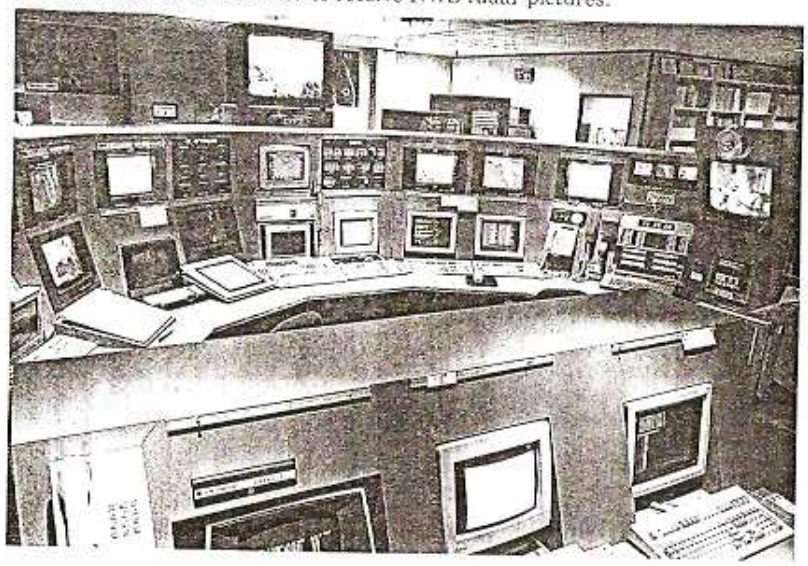

FIG. 17-11. The WTVT Weather Department in Tampa as it looked in 1989 shortly after its inauguration. The operational area includes the use of McIDAS and its several workstations modified for television production. The large elevated monitor is an on-air briefing site. An automated camera can view any portion of this area for scheduled or nonscheduled nowcasting.

APPENDIX

Chronology of Weathercasting Conferences

Name	Date	Place	*Bulletin* reference
National Conference and Workshop on Radio and Television Presentation of Weather	3–4 March 1956	Hartford, CT	Vol. **37**, No. 2
2d Conference on Weathercasting	8–9 December 1967	Tampa, FL	Vol. **48**, No. 10
3d Conference on Weathercasting	7–8 November 1969	Chicago, IL	Vol. **50**, No. 8
4th Conference on Weathercasting	9–10 January 1972	New Orleans, LA	Vol. **52**, No. 10
5th Conference on Weathercasting	9–10 June 1973	Harwichport, MA	Vol. **54**, No. 4
6th Conference on Weathercasting	19–20 January 1975	Denver, CO	Vol. **55**, No. 11
7th Conference on Weathercasting	26–27 June 1976	Toronto, ON, Canada	Vol. **57**, No. 3
8th Conference on Weathercasting	29 January–2 February 1978	Savannah, GA	Vol. **58**, No. 10
9th Conference on Weathercasting	16–17 June 1979	San Francisco, CA	Vol. **59**, No. 12
10th Conference on Weathercasting	14–15 June 1980	Denver, CO	Vol. **61**, No. 3
11th Conference on Weathercasting	26–18 June 1981	Boston, MA	Vol. **62**, No. 2
12th Conference on Weathercasting	25–27 June 1982	Seattle, WA	Vol. **63**, No. 3
13th Conference on Broadcast Meteorology	17–19 June 1983	Minneapolis, MN	Vol. **64**, No. 4
14th Conference on Broadcast Meteorology	22–24 June 1984	Clearwater Bch, FL	Vol. **65**, No. 3
15th Conference on Broadcast Meteorology	9–12 April 1985	Honolulu, HI	Vol. **66**, No. 1
16th Conference on Broadcast Meteorology	3–6 April 1986	Atlanta, GA	Vol. **67**, No. 1
17th Conference on Broadcast Meteorology	25–27 June 1987	Reno, NV	Vol. **68**, No. 2
18th Conference on Broadcast Meteorology	17–19 June 1988	Chicago, IL	Vol. **69**, No. 2
19th Conference on Broadcast Meteorology	1–4 June 1989	Bal Harbour, FL	Vol. **70**, No. 3
20th Conference on Broadcast Meteorology	21–24 June 1990	Boulder, CO	Vol. **71**, No. 3
21st Conference on Broadcast Meteorology	18–19 October 1991	Crystal City, VA	Vol. **72**, No. 9
22nd Conference on Broadcast Meteorology	11–13 June 1992	San Diego, CA	Vol. **73**, No. 4
23rd Conference on Broadcast Meteorology	29 June–1 July 1993	Charleston, SC	Vol. **74**, No. 4
24th Conference on Broadcast Meteorology	15–20 January 1995	Dallas, TX	Vol. **75**, No. 10

REFERENCES

AMS, 1955a: Minutes of the Council. Washington meeting, 4–5 May 1955. *Bull. Amer. Meteor. Soc.* **36,** 296–297.

——, 1955b: News and notes. Radio and television. *Bull. Amer. Meteor. Soc.*, **36,** 317.

——, 1956: National Conference and Workshop on Radio and Television Presentation of Weather Program. *Bull. Amer. Meteor. Soc.*, **37,** 81–82.

——, 1967: Program: Second Conference on Weathercasting. *Bull. Amer. Meteor. Soc.*, **48,** 781–784.

——, 1994a: Membership qualifications. *Bull. Amer. Meteor. Soc.*, **75,** 1485.

——, 1994b: Seal of Approval Program for Radio and Television. *Bull. Amer. Meteor. Soc.*, **75,** 1484–1488.

Davis, F.K., 1976: Weather and the media. *Bull. Amer. Meteor. Soc.*, **57,** 1331–1333.

——, 1990: Book review of *Television Weathercasting: A History. Bull. Amer. Meteor. Soc.*, **71,** 1774–1776.

Fidler, J.C., 1948: Weather via television. *Bull. Amer. Meteor. Soc.*, **29,** 329–331.

Fletcher, R.D., 1956: Two outstanding problems of modern meteorology. *Bull. Amer. Meteor. Soc.* **37,** 473–476.

Geer, I., 1975: The establishment, operation, and evaluation of a school weather service. *Weatherwise*, **28,** 114–117.

Jehn, K.H., 1956: The challenge of television weather programs. *Bull. Amer. Meteor. Soc.*, **37,** 351–353.

Leep, R.L., 1969: A broadcaster's severe weather network. *Bull. Amer. Meteor. Soc.*, **50,** 630–632.

WTVT Weather Service, 1991: *Thirty-Five Years of History, 1956–1991.*