ones that do present either data or theoretical models directly relevant to the HH 1/2 outflow (which of course involves somewhat subjective decisions). We have kept all refereed papers, and included papers in conference proceedings and observatory reports only if they provided information not present in the refereed literature. Finally, we have supplemented the resulting bibliography with papers on HH 1/2 found in the reference lists of the initial selection (but which do not directly appear in the ADS search described above).

In this way, we arrive at a list of 143 papers. A "commented bibliography", in which short comments describing the contributions of each of these papers are included, is available on-line[6]. A histogram showing the yearly publication rate of papers on HH 1 and 2 is shown in Figure 1. In this figure, we see that in the 1950s and 60s one paper on HH 1/2 was published every ∼2–3 years. In the 1970s, the number of papers rose dramatically, to a rate of ∼1.5 papers per year. The 1980s and 1990s had rates of ∼5 papers per year. Finally in the past decade, the rate has gone down to 2 papers per year. It is noteworthy that for the 2005–2009 period, the average publication rate has been of only 1.2 papers per year.

Therefore, unless there is renewed interest in the HH 1/2 system in the future, the papers included in our bibliography will represent the main component of our knowledge of these objects for many years to come.

3. THE HH 1/2 SYSTEM

3.1. *Overall morphology*

In the photographic plate of the original paper of Herbig (1951), one can see 3 HH objects: HH 1, 2 and 3. Figure 2 shows a photographic plate, kindly provided by George Herbig, taken on January 20, 1947 (for details, see Reipurth & Heathcote 1997). In the image from the catalogue of Herbig (1974), HH 1, 2 and the C-S star (lying on the axis joining HH 1 and 2, about 1/4 of the way from HH 1 to 2) are seen. We note that the nature of HH 3 is unclear; Reipurth (1989) identifies HH 3 as being part of a separate outflow system to the W of HH 1/2 with an outflow axis almost parallel to the HH 1/2 axis, but more detailed proper motion studies are required to clarify whether HH 3 is a separate flow.

The first (pre-COSTAR) HST images of HH 2 were obtained by Schwartz et al. (1993). Subsequently HST has imaged both HH 1 and 2 a number of times. Figure 3 shows a pair of deep HST images of HH 1-2 in Hα and [SII] filters, from Bally et al. (2002). The entire bipolar outflow is almost 3 arcminutes long, corresponding to an overall projected extent of 0.35 pc at the assumed distance of ≈400 pc, which is the currently best distance estimate for the general region (see Muench et al. 2008 for a detailed discussion of the distance to the Orion Nebula Cluster region). HH 1 shows a fine bow shock structure, with an extent of ∼10 arcsec, with wings swept back-

[6] http://www.nucleares.unam.mx/astroplasmas/.

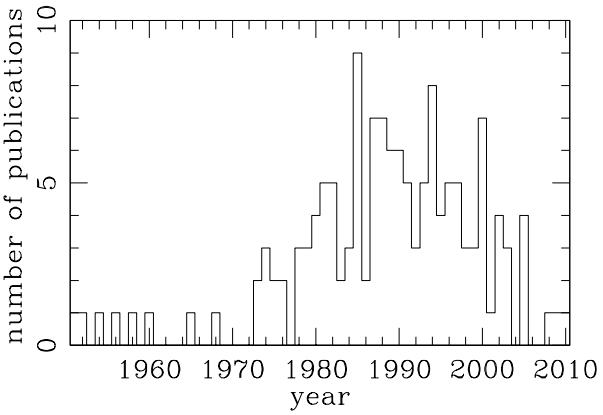

Fig. 1. Yearly number of publications on the HH 1/2 system.

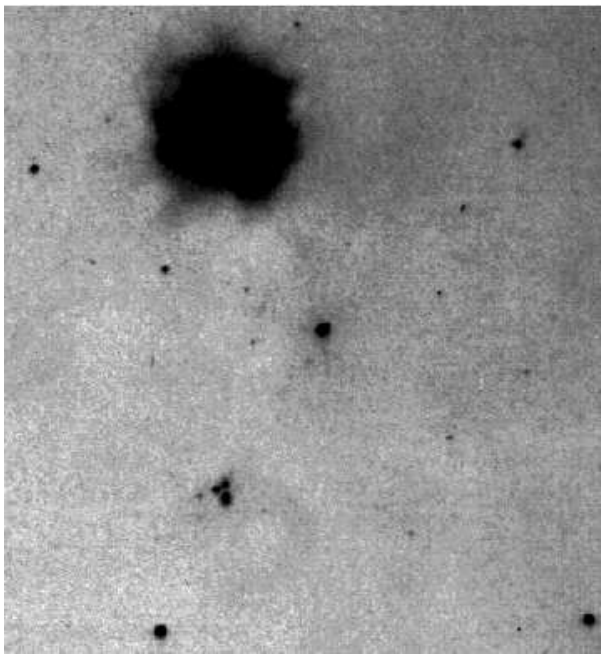

Fig. 2. HH 1, 2, and 3 as seen in an enlargement of an unpublished plate obtained by George Herbig on Jan 20, 1947. For further details, see Reipurth & Heathcote (1997).