clearly the same effect.[5] As the messages about these results reverberated around the world we got a rapid confirmation of the J/ψ from the groups at Frascati who managed to push the energy of their e^+e^- ring from the maximum design value of 3.0 GeV up to 3.1 GeV! This is also illustrated in Fig. 3, and, in fact, all 3 papers were published in the same issue of Physical Review Letters.[6,7,8]

Encouraged by our remarkable result we decided to look for more sharp peaks! Burton Richter[9] together with Ewan Paterson and Robert Melen was able to modify the SPEAR operation so as to run in a mode in which the energy was stepped up by 1 MeV every minute while Martin Breidenbach was able to modify our analysis system so that the resulting cross section points could be calculated on-line. Fig. 4a illustrates a real time test of this new setup which shows clearly that in this mode of operation a resonance like the ψ can be readily discovered. Indeed 10 days later during the early morning of November 21 the ψ' was discovered. See Figs. 4b and 4c. A later confirmation of these results by the DASP group at DESY is shown in Fig. 4d.

Emboldened by this success, after taking a day or two off to write the ψ' paper, [10] we continued our scan and scanned on and on and on ... Fig. 5 gives the results of this scan and illustrates clearly that no other *narrow* resonance showed up, since, unfortunately, SPEAR was not designed to reach 10 GeV! We did however find a broad resonance at 4.4 GeV and considerable structure near 4.03 GeV. In Fig. 6 I show a later plot (1977) which shows this structure as well as the ψ'' (3770) discovered by the LGW collaboration.[11]

During the period November 1974 to May 1976 enormous progress was made in understanding the properties of the ψ and ψ', and in unraveling the entire Psion spectroscopy.

Thus for the ψ and ψ' we measured the spin and parity in interference experiments with Bhabha scattering $J^P = 1^-$ the quantum numbers G = (-), I = 0, from final state studies, the numerous branching ratios, the transitions $\psi' \to \psi\pi^+\pi^-$ and $\psi' \to \psi\eta$. Following a DASP discovery[12] of a P state intermediate between ψ and ψ', the χ states $^3P_0$, $^3P_1$ and $^3P_2$ obtained from $\psi' \to \chi\gamma$, $\chi \to \gamma\psi$ and also from direct hadronic χ decays were identified. The detailed studies of the transitions between these states came later from work by the MPPSSD collaboration[13] and the crystal ball collaboration.[14]

During this period also, Martin Perl came up with a remarkable piece of scientific deduction.[15] Martin found 24 $e^\pm\mu^\mp$ candidates among non-colinear 2 prong events with no extra gamma's. He interpreted these events as examples of a possible heavy lepton. As we all know subsequent experimentation proved him to be right! He had indeed found the third - or τ - lepton. But this is a story Martin should tell!

Where does the name ψ come from?

We started out[2] calling the resonance SP (3105) for about 1 day where SP stood for SPEAR, however, we soon realized that a 2 letter name was unsuitable. The name ψ came from a cursory look I made through the Particle Data Group booklet for an unused, yet pronounceable, Greek letter--while on the phone to George Trilling and then to Burton Richter. Little did we know that the resonance would end up with 2 letters, J/ψ anyhow! All the same--we evidently "got a sign" later, from the reaction: $\psi' \to \psi\pi^+\pi^-$, $\psi \to e^+e^-$ that our choice of the Greek letter ψ was an auspicious one! See Fig. 7.

What does this all have to do with charm?

While our work on the ψ and ψ' was not influenced by theoretical predictions the work on the Psion spectroscopy was! In particular there now came a ground swell of theoretical papers interpreting the effects we were observing (see Fig. 8)--the front runners among these theories was the one suggesting that the J/ψ contained "hidden charm"