CFB boiler. Methods to determine the fluidization velocity at the transition from the single to the exploding bubble regime are proposed and discussed. The transition velocity increases with an increase in particle size and bed height.

An experimental study on developing air-water two-phase flow along a large vertical pipe: effect of air injection method
Ohnuki A. & Akimoto H., *International Journal of Multiphase Flow*, 1996, 22/6 (1143-1154). In English.
The flow structure in a developing air-water two-phase flow was investigated experimentally along a large vertical pipe. Two air injection methods (porous sinter injection and nozzle injection) were adopted to realize an extremely different flow structure in the developing region. No air slugs occupying the flow path were recognized in this experiment regardless of the air injection methods even under the condition where slug flow is realized in the small-scale pipe. In the lower half of the test section, the axial distribution of sectional differential pressure and the radial distribution of local void fraction showed peculiar distributions depending on the air injection methods. However, in the upper half of the test section, the effects of the air injection methods are small in respect of the shapes of the differential pressure distribution and the phase distribution.

Measurements of fluid/particle correlated motion in the far field of an axisymmetric jet
Prevost F., Boree J., Nuglisch H.J. & Charnay G., *International Journal of Multiphase Flow*, 1996, 22/4 (685-701). In English.
Typical features of fluid-particle interaction in the far field of an axisymmetric polydispersed particle laden tube jet were measured and analysed in the present study. Measurements up to 45 jet diameters were obtained by using a phase doppler anemometer. The statistical properties of four particle size classes were obtained in order to cover a wide range of particle relaxation times. The downstream evolution of the mean longitudinal particle velocity field and of the particle radial and longitudinal turbulent components is first displayed. A method is proposed and validated to determine the statistics of the velocity of the fluid seen by the particles.

Determination of the interface curvature in stratified two-phase systems by energy considerations
Brauner N., Rovinsky J. & Moalem Maron D., *International Journal of Multiphase Flow*, 1996, 22/6 (1167-1185). In English.
A configuration of a plane interface between two stratified layers is appropriate for two-phase systems which are dominated by gravity, as is the case for large scale air-water systems under earth gravitation. However, for a general two-fluid system, the basic in situ configuration is stratified layers with a curved interface. Energy considerations are employed to predict the interface configuration. The effect of the fluid physical properties, in situ hold up, tube dimension, wall adhesion and gravitation on the characteristic interface curvature are explored. The prediction of interface curvature provides the closure relation required for a complete solution of stratified flows with curved interfaces for a variety of two-fluid systems.

The application of split-coefficient matrix method to transient two phase flows
Lu D.M., Simpson H.C. & Gilchrist A., *International Journal of Numerical Methods for Heat and Fluid Flow*, 1996, 6/3 (63-76). In English.
An easy-to-use numerical model for transient two-phase pipe flow analyses was developed by applying the split-coefficient matrix method (SCMM) to a homogeneous equilibrium two-phase flow model. Te basic idea of the SCMM is to split the Jacobian coefficient matrix into two sub-vectors, each associated with eigenvalues of the same sign. Hence, one-sided finite difference schemes can accordingly be applied to the sub-vectors. The present model was validated against experiments. It is numerically stable provided that a criterion is met due to the use of a time explicit format.

End of the rope for vortex pressure pulsations
Amini F., *International Water Power and Dam Construction*, 1996, 48/11 (26 + 28). In English.
The effects of cavitation on the performance and efficiency of hydraulic turbines are examined. Mathematical models are presented for predicting vortex pressure pulsations. The first is a spiral cone cavity model and the other is a partially rolled up vortex model. The effectiveness of the recovery rotating ring, fabricated in a simple manufacturing process, for controlling unwanted pulsations and swirls in draft tubes in Francis turbines is discussed.

A boundary current induced by diffusion near a motionless horizontal cylinder in a continuously stratified fluid
Baidulov V.G. & Chashechkin Yu.D., *Izvestiya - Atmospheric and Oceanic Physics*, 1996, 32/6 (751-756). In English.
The Cauchy problem of the formation of a diffusion-induced boundary layer near a motionless horizontal cylinder in a continuously stratified fluid at rest is solved in the Boussinesq approximation. Asymptotics of the tangential and radial velocities and of the salinity perturbation for short periods are obtained using the Laplace transformation, and conditions of their applicability are determined. The boundary current under formation splits into two sublayers of considerably different thicknesses. Expressions for the circulation and the dynamic vorticity are also obtained.

Hydrodynamic behavior of a binary solids fluidized bed
Bai D., Madusa Y., Nakagawa N. & Kato K., *Journal of Chemical Engineering of Japan*, 1996, 29/2 (211-216). In English.
This paper presents a study on the hydrodynamic behavior of a fluidized bed containing mixtures of solids of different sizes and densities. The transition velocity from bubbling to turbulent fluidization and solids holdup of the dense bed in different fluidization regimes were experimentally determined. The onset velocity to turbulent fluidization was found to increase with increasing fraction of coarse solids. Solids holdups changed dif-