

NOTES ON RECENT LITERATURE RELATING TO PHOTO INTERPRETATION

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Photogeologic Study in Kent County, Texas by C. De Bliex and G. F. Shepherd; Oil & Gas Jour., July 22, 1951, p. 86, 88, 98-100.

This paper is of unusual interest in being one of the very few published case-histories of photo interpretation projects. The first part describes anomalies in color tone, texture, and erosional pattern of the terrain, as revealed by photogeologic studies, and discusses their significance in reflecting subsurface structural conditions which may involve potential traps for oil. The anomalies are illustrated by reproductions from sections of 5 photo mosaics; unfortunately, the reproduction is not of sufficiently high quality to do justice to the contrasts discussed in the text.

The second part of the paper presents the results of drilling on photogeologic anomalies. Of 4 wildcat wells drilled on previously untested localities solely on the basis of photogeologic anomalies, 3 found new oil production. Of a total of 13 anomalies drilled, including those not located solely by photogeologic methods, 7 produced oil, 5 others were confirmed as indicating subsurface structural anomalies although not productive of oil, and one proved to be unrelated to any subsurface structural anomaly. In the same general area, there are 3 producing wells located in places where no photogeologic anomalies were observed. The value and limitations of the photogeologic approach to petroleum exploration are amply demonstrated.

Photogeologic Interpretation Using Photogrammetric Dip Calculations by D. H. Elliott; Calif. Div. of Mines, Spec. Rept. 15, 1952, 21 p.

A method of computing topographic slope or geologic dip, requiring only a pocket stereoscope, a millimeter scale, and a transparent overlay, is outlined. Graphic constructions on the overlay provide a basis for making measurements required for trigonometric solution of the problem, and a nomogram is used to obtain the answer. It is stated that a worker familiar with the procedure can make one calcula-

tion in about 10 minutes. Field checking indicates that an accuracy of about plus-or-minus 10 per cent of the observed field dip is attained.

Our World from the Air; An International Survey of Man and His Environment by E. A. Gutkind; Doubleday & Co., Garden City, N. Y., 1952.

This is essentially a picture book, with 400 photographic plates, predominantly oblique air views. It represents a recognition of the importance of air photography in comparatively new fields, sociology and human geography, and a full exploitation of that technique in gaining new perspective on man and his works. Photos from all parts of the world are brought together to show the many ways in which the natural environment has been adapted to and changed by the needs of man. Settlements ranging in character from primitive hamlets and medieval villages to modern industrial communities are portrayed, and the varying degrees of congestion, confusion, and beginnings of unification which they exhibit are spotlighted. Agricultural patterns, old and new, from all of the continents, together with defensive works, lines of transportation and communication, mines, dams, seaports, and related facilities are all included.

The book should be of particular interest to all students of urban and rural geography and sociology, and of regional planning. To the enthusiast in air photography, it should bring the satisfaction of seeing his product entering into a new and fundamentally important field of learning. And to the general photo interpreter, it will contain much background information that may be of assistance in understanding land utilization patterns in remote parts of the world.

Wissenschaftliche Luftbild-interpretation by Toni Hagen; Geographica Helvetica, vol. 5, no. 4, 1950, p. 209-276.

This magnificently illustrated paper is expressive of the status of photo interpretation from the geographic viewpoint in at least one European country. The first part

of the paper sketches historical background, sets forth the objectives of interpretation, and outlines methodology. In the second part of the paper, the methods previously presented are applied in full detail to a series of 19 photos reproduced as anaglyphs, and drawn from New Guinea, South Africa, the Swiss plateau, and the Jura Mountains. Due attention is given to the interpretation of geology, topography, vegetation, land utilization, and land management. Interpretations are illustrated by numerous block diagrams, maps, and supplementary oblique photos. The case method of presentation is admirably exemplified. The third part of the paper is devoted to a consideration of the geometric properties of air photos and stereoscopic methods of study, including information on photo coverage in Switzerland. A lengthy bibliography concludes the paper.

Connection de Stéréogrames pour L'entraînement à L'identification des Détails sur les Photographies Aériennes à Axe Vertical; Institut Géographique National, Paris, 1947, 54 p.

This handsome volume contains nearly 200 stereograms, photographically reproduced, with explanatory text and accompanying maps, illustrating a wide range of terrain and cultural features in France and in French territory in Africa and in the West Indies. It is obtainable from the Service de la Photogrammétrie, Institut Géographique National, 2, Avenue Pasteur, Saint-Mande (Seine), Paris.

Pimpled Plains of Eastern Oklahoma by M. M. Knechtel; Geol. Soc. Amer. Bull., vol. 63, 1952, p. 689-700.

Air photos are used to illustrate the soil mounds, and to make comparisons with fissure patterns in plays and in tundra, believed to be genetically similar in part.

Arctic Ice Islands by L. S. Koenig, K. R. Greenaway, Moira Dunbar, and G. Hattersley-Smith; Arctic, vol. 5, July 1952, p. 67-103.

Further Notes on Ice Islands in the Canadian Arctic by M. R. Montgomery; Arctic, vol. 5, Oct. 1952, p. 183-187.

These papers contain numerous excellent photos showing detailed surface features of the much-discussed ice islands

and related phenomena, and should be of interest to all photo interpreters concerned with the Arctic. A location map, and a map showing drift of 3 of the islands, are included. The islands range up to 300 square miles in area.

"From the air ice islands are readily distinguished from the pack ice by their homogeneous appearance and strikingly regular surface patterns. Their surface looks ridged or rolling, with wide intervening troughs. . . . Most striking of all is the ability of the islands to keep their shape over a period of years, which suggests great thickness and hardness. Ordinary pack ice, by contrast, breaks and reforms continually under the influence of pressure, and although particularly heavy floes may remain substantially unchanged for several years they cannot be distinguished from the surrounding floes which they closely resemble."

How Colored Aerial Photographs Make Newest Ore-search Method by P. A. Laylander; Mining World, June 1952, p. 41-43.

This paper reports a pioneer undertaking in the application of color photography to prospecting for metalliferous ore deposits. The author made his own photos, using military surplus equipment. Scale ranged from 1:6,000 to 1:12,000. Numerous well-known mining districts were photographed to establish criteria for recognition of mineralization, and undeveloped areas were photographed to permit the application of those criteria. Despite departures from true color rendition, it was found that the color photos provided many important data not readily obtained by conventional methods, and hold much promise as a prospecting technique in arid regions.

Carolina Bays and Their Origin by W. F. Prouty; Geol. Soc. Amer. Bull., vol. 63, 1952, p. 167-224

Air photos continue to play a major role in the study of the controversial Carolina "bays," first brought to scientific attention by Melton and Schriever in 1933, on the basis of observations on air photos. In this latest contribution to the problem, photos were used to map the distribution of the bays along the Atlantic coastal plain area, and to make detailed analysis of the form and pattern of individual occurrences.

Photo interpretation was supplemented by magnetometer studies, field observations, and experimentation. A modified version of the original meteoritic impact hypothesis is favored. Numerous excellent reproductions of photos and mosaics are included in the paper.

Photo Interpretation of the Terrain along the Southern Part of the Alaska Highway by H. M. Raup and C. S. Denny; U. S. Geol. Surv. Bull. 963-D, 1950, p. 95-135.

The combined data and methods of geology and botany are applied to terrain interpretation in British Columbia and southeastern Yukon, as representative of northern regions. The various forest types of their geographic affiliations are first discussed from the ground view, and then from the aerial view, with a key for their identification on air photos. "Many of the individual species or groups of species, it is pointed out, can be identified on aerial photographs at scales of 1:20,000 or less if one has a general knowledge of the geography of the principal vegetation types, and if some account is taken of their topographic position—whether, for example, they grow on terraces, on steep mountain slopes, or above the timber line." The individual forest types are illustrated by a series of stereo triplets, each accompanied by an outline map showing the distribution of the vegetative types included.

The value (and limitations) of 13 vegetative types as indicators of terrain characteristics are discussed and are summarized in tabular form under the following headings: local topography, soil and substratum, water table and permafrost, character of surface when wet, trafficability, surface water supply, timber and firewood, cover, and concealment.

"The success achieved by the methods outlined here is due to several factors, the most important of which are the relative immaturity of the soils, a vegetational complex also notable for its immaturity, and a climate conducive to frequent burning of the vegetation. The forest types are closely related to the kinds of ground on which they grow. For example, lodgepole pine growing in relatively open stands on rather flat terrain, such as a terrace along a stream, indicates a sandy or gravelly subsoil. The maturing of soils and vegetation in areas that have remained undisturbed by glaciation for a long period

tends to obscure the relationship between forest types and kinds of ground, but in the region under consideration the disappearance of glacial conditions has been sufficiently recent to maintain a more direct relationship. Forest fires, because they have tended to hold back the maturing of the vegetation, have made it possible to clarify still further the coincidence of forest types and kinds of ground."

The report is a pioneer undertaking of its kind, and is noteworthy for its analytical approach and judicious tone. It should serve as a model for similar studies.

Map of Pleistocene Eolian Deposits of the United States, Alaska and Parts of Canada by James Thorp, H. T. U. Smith, and others; published by Geological Society of America, N. Y., 1952.

This colored wall map, on a scale of 1:2,500,000, is of indirect interest to photo interpreters in showing places where dune sand and loess are known to occur. Data on thickness and continuity of loess deposits, and on landforms associated with the dune sand, are included.

Odd Geologic Structures of Southern Oklahoma by C. W. Tomlinson; World Oil, Dec., 1952, p. 103-110, Jan., 1953, p. 90-94.

This paper contains 12 oblique and vertical photos, in part annotated, showing the structural features described, and should be of particular interest to geologists interpreting subsurface structures from air photos in the type of terrain discussed. Maps and cross-sections are also included.

Rapport de la Commission pour L'utilisation des Photographies Aériennes dans les Études Géographiques, Union Géographique Internationale; International Geographic Congress, Washington, D. C., August 1952 and *Intéret des Stéréogrammes Aériens dans L'enseignement de la Géographie Physique*, Institut Géographique National, Paris, 1951.

These contributions represent the efforts of an international group to expedite the use of air photos by geographers. The first of the above reports contains a series of short papers by such well known photo-geographers as Kirk Stone, of the U.S.A. and David Linton, of England, and others, setting forth the applications of air photos

to geographic teaching and research. Ample bibliographic material is included, and one feature of special interest is a map showing known air photo coverage for the entire world.

The second report listed above contains nearly 50 annotated stereograms illustrating a wide range of phenomena in the field of physical geography.

Air Survey and Geology by T. D. Weatherhead; Rept. 18th Session, Internat. Geol. Cong. (Great Britain, 1948), Part VI, p. 92-97, London, 1950.

This paper is of a general nature, and reviews the advantages of air photos, photographic procedures, methods of making maps and mosaics, geological interpretation and mapping, and coordination of air photography with air-borne magnetometer surveys.

Nederzettings-en Occupatie-vormen in Suriname by J. I. S. Zonneveld and G. J. Kruyer; Cent. Bur. Luchtkaartering te Paramaribo, Publ. no. 6, 1951, p. 376-411 (English summary).

This paper uses 9 vertical air photos, together with various maps and diagrams, to illustrate types of settlement and land use in Surinam. A detailed analysis of the factors which influence the situation, shape, and internal structure of settlements and land use patterns is presented. The illustrations are well reproduced, and should be of interest to those concerned with photogeographic interpretation, especially in tropical areas.

Luchtfoto-Geografie in Suriname by J. I. S. Zonneveld; Cent. Bur. Luchtkaartering te Paramaribo, Publ. no. 8, 1952, p. 35-48, (English Summary).

Geographic uses of air photos are discussed and illustrated with 7 vertical photos, including one stereogram.

Watervallen in Suriname by J. I. S. Zonneveld; Cent. Bur. Luchtkaartering te Paramaribo, Publ. No. 9, 1952, p. 499-506.

Morphologic types of waterfalls and rapids in Surinam are described and illustrated with 8 vertical air photos, including 6 stereograms.

The Lakes of Minnesota, Their Origin and Classification by J. H. Zumberge; Minn. Geol. Surv. Bull. 35, 1952.

The genetic classification, the modification, and the distribution of lakes are discussed and illustrated with 12 excellent vertical air photos. An overwhelming majority of the lakes are caused by glacial erosion and deposition, and these are subdivided into 11 different types. The paper will be of particular interest to photo interpreters dealing with lakes in glaciated territory.

On the Geomorphic and Geologic Analysis and Interpretation of Aerial Photographs by G. L. Smit Sibinga; Tijdsch. van het Konin. Nederl. Aardrijkskundig Genootschap, Deel LXV, 1948, p. 692-700.

The geological observations made by Albert Heim in a balloon trip over the Alps and Jura Mountains in 1898 are compared with those now possible from air photos. The interdependence of geologic and geomorphic interpretation is emphasized, and both are illustrated by detailed discussion of two photos from the Alps.

Minor moraines in South Dakota and Minnesota, by C. S. Gwynne, Geol. Soc. Amer. Bull., vol. 62, 1951, p. 233-250.

The writer's previous studies in Iowa (1942) are extended to southeastern South Dakota and southern Minnesota. The pattern of the features described was first observed on county photo index sheets, and subsequent studies were based largely on these sheets also, supplemented by contact prints of selected areas, and by field observations. The minor moraines consist of low, rounded, parallel to subparallel, closely-spaced, curvilinear swells or ridges having a relief generally not greater than 20 feet, but locally considerably in excess of that amount. In many places these swells are obscure to the ground observer. The minor moraines are interpreted as ice-front deposits formed annually during glacial retreat. The paper is illustrated by 6 vertical photos, by distribution maps of the ridges prepared from photos, and by topographic profiles. The phenomena described should be of interest to all photo interpreters working with glaciated terrain.